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ABSTRACT

This report provides updated information concerning the status of the occupational education delivery system in the Boston Public Schools. The source of the information contained in the report is the Boston Program Audit, a system-wide assessment of high school and middle school occupational program functioning. The report examines the findings of the Boston Program Audit that relate to federal, state, and local mandates for occupational education and assesses the overall adequacy of the occupational delivery system in terms of compliance with legislation. In addition to satisfying the need for compliance assessment, the report addresses a range of knowledge gaps concerning the day-to-day functioning of occupational education. Toward that end, the report discusses topics such as the number and location of occupational programs; the number and characteristics of the student population enrolled in those programs; students' attitudes toward and knowledge of occupational education; the interface of guidance, administration, and instructional staff in the delivery of occupational programs and related services; the state of the art of curriculum, facilities, and equipment; qualifications and characteristics of occupational instructional staff; use of community resources; and record keeping. Problem areas are highlighted, and recommendations for improvement are made. (KC)

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THE DEVELOPMENT AND IMPLEMENTATION OF AN EVALUATION PROJECT MANAGEMENT SYSTEM FOR THE OCCUPATIONAL EDUCATION PROGRAMS OF THE BOSTON PUBLIC SCHOOLS

Project No. 80-385-470-020-7

FINAL REPORT

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PREFACE

In January, 1980, the Cambridge Office of American Institutes for Research (AIR) was awarded a contract by the State Department of Education, Division of Occupational Education, to develop and implement a management system for the evaluation of occupational programs in the Boston Public Schools. The results of that evaluation, the Boston Program Audit, are embodied in this Final Report, along with the recommendations that Audit Team members have developed based on these findings.

In addition to changes arising from routine editing and revision, the Final Report differs from the Preliminary Report that was published in July, 1980, in several respects. First, the Final Report provides a sense of the dimension and prevalence of identified strengths and weaknesses by specifying the distribution of these characteristics across districts. A map illustrating the geographic location of Boston's nine school districts appears as Figure 1.1. Second, the organization and format of the Final Report have been modified in order to distinguish more clearly between the findings and their implications. Finally, information that became available after the publication of the Preliminary Report has been integrated into the text of the Final Report. This information includes Audit Team recommendations; Unified Plan implementation and teacher certification detail; and findings related to federal funding accountability concerns.

AIR hopes that the results of this evaluation will be translated into constructive action that will benefit present and future student populations and the larger society that will employ them.

Figure 1.1

District 1 - Brighton-Mission Hill
District 2 - Jamaica Plain
District 3 - West Roxbury
District 4 - Hyde Park
District 5 - Dorchester
District 6 - South Boston
District 7 - Madison Park
District 8 - East Boston
District 9 - Citywide

CHAPTER ONE
BACKGROUND

A. Statement of Purpose

The purpose of this report is to provide updated information concerning the status of the occupational education delivery system in the Boston Public Schools. The source of the information presented in this report is the Boston Program Audit, a systemwide assessment of high school and middle school occupational program functioning. The overall intention of the Boston Program Audit was to establish a comprehensive data base, against which progress toward achieving occupational education goals can be systematically reviewed. This report examines the findings of the Boston Program Audit that relate to federal, state, and local mandates for occupational education and assesses the overall adequacy of the occupational delivery system in terms of compliance with relevant legislation. In particular, the report focuses on progress toward achieving the objectives of the United States District Court ordered Unified Plan for Occupational Education in the City of Boston.

Such systematic assessment of the status of Federal Court Order implementation has not been undertaken since 1976, when the state Board of Education submitted a Baseline Report to the U.S. District Court. This report documented a lack of progress toward accomplishing goals and objectives specified in the Unified Plan from the time the Plan was ordered in September, 1975, through June, 1976. Despite the Plan's clear specifications for internal and external evaluation and monitoring, there is no evidence that a systemwide evaluation model had been developed and instituted prior to the Boston Program Audit.

This report undertakes a large-scale update of the Baseline Report. Moreover, in addition to satisfying the pressing need for compliance assessment, this report addresses a range of knowledge gaps concerning the day-to-day functioning of occupational education. Toward that end, the

report discusses such topics as the number and locations of occupational programs; the number and characteristics of the student population enrolled in occupational programs; students' attitudes toward and knowledge of occupational education; the interface of guidance, administration, and instructional staff in the delivery of occupational programs and related services; the "state of the art" of curriculum, facilities, and equipment; qualifications and characteristics of occupational instructional staff; use of community resources; and recordkeeping.

We hope that the report provides the impetus and suggests the direction for improving the educational opportunities within occupational programs. Instituting the mechanisms for enacting and monitoring that change is the report's challenge to concerned educators, administrators, and policymakers. In that regard, the report will not be "final" until such change is realized.

B. Orientation to the Report

Several elements of the evaluation and reporting process are considered fundamental to an informed review of the results, their implications, and recommended actions. The purpose of this section, therefore, is to identify and answer key questions* in order to enhance the reader's understanding of the remainder of the report, specifically with regard to the determinants of its format and content.

*The questions were formulated in response to areas of misinterpretation evident in written reactions to the Preliminary Report.

1. Who provided the information contained in this report?

The information summarized in this report was gathered from several sources, as identified below.*

- Self-Evaluation
  Teacher representatives from all high school and middle school occupational programs in Boston's nine districts were asked to complete a self-administered questionnaire regarding the functioning of their occupational programs. A total of 319 usable teacher self-evaluations was obtained. Administrative and guidance personnel from each school were requested to respond to comparable questionnaires focusing on occupational programs school-wide. Seventy-three administrators and 52 guidance staff completed these forms.

- On-Site Evaluation
  Evaluation Teams, composed of representatives from local school districts (other than Boston) and the State Department of Education (both the Central Office and the Regional Education Centers) made site visitations to high school and middle school occupational programs system-wide in order to obtain first-hand information from a variety of sources. Two on-site questionnaires were used: Short Form and Long Form. The on-site Short Form was designed to collect baseline information about several aspects of occupational programming, including curriculum, program content, and employment outcomes of senior program completers (where applicable). Teachers and department heads (high schools only) supplied requested Short Form information.

  The on-site Long Form was developed to obtain information concerning the functioning of occupational programs. The Long Form sought information from teachers of occupational programs, department heads (high schools only), guidance staff and administrative personnel. In addition, on-site Team members examined reports and documents which schools/programs made available, and for selected items, Team members were asked to rate the adequacy of certain aspects of the occupational program as currently implemented.

  Either the on-site Long Form or the on-site Short Form was administered to all high school occupational programs. Approximately half of the programs at the middle school level were evaluated using one of the on-site forms.

- Demographic Information
  The principals/headmasters of high schools and middle schools were asked to provide detailed information about the total student population, including such characteristics as race/ethnicity, sex,

*A complete discussion of the components of the evaluation, including the occupational programs undergoing evaluation, is presented in Appendix B (Research Procedures).

grade, and handicap/disadvantage. Information concerning the sex and race/ethnicity of teachers of occupational programs was also requested. In addition, a teacher representative from each occupational program area (e.g., Typing, Machine Shop, Clothing Construction/Apparel Arts) was requested to complete an identical demographic form regarding students enrolled in that program area.

- CWEC Student Survey*
  One homeroom/classroom at each grade level in each high school was selected for students to complete a questionnaire developed by the City-Wide Educational Coalition (CWEC). This questionnaire was designed to survey students' knowledge about and attitudes toward occupational education, regardless of current enrollment status in an occupational program area.

In sum, the Boston Program Audit focused on collecting systemwide information concerning occupational programming at the school and program level. The specific respondent groups were selected on the basis of their first-hand contact with and knowledge of the functioning of occupational programming. The Team members who administered the on-site portion of the evaluation represented a cross-section of occupational program area expertise, as well as generic specialities such as special education, bilingual education, and Equal Educational Opportunity (EEO).

Providing multiple data sources to insure that some information could be gathered for each question had two consequences. First, for any question there is a large amount of response inconsistency across sources. If a given question had three potential responses (e.g., USUALLY, SOMETIMES, OR NEVER), and if all six sources provided conflicting responses, it becomes difficult to draw meaningful conclusions.

Another obstacle to generalizing from inconsistent data collected from a variety of sources is the relatively small number of responses in any response category. There is often a dramatic difference between numbers of responses to self-evaluation questions and their on-site counterparts. Consequently, in those instances in which self-evaluations and on-site

*The City-Wide Educational Coalition (CWEC) developed this questionnaire for use at the middle school level. Permission was obtained from CWEC to administer the same questionnaire in the high school grades at the time of the conduct of the Boston Program Audit

data are in agreement, information from self-evaluations is reported. In cases in which on-site data differ from self-evaluation data, the reader is cautioned about the limitations associated with small sample size.

2. How complete is the information obtained by the Boston Program Audit?

There are, of course, limitations to what the Boston Program Audit could accomplish. Because the audit hoped to collect comparable information about diverse occupational programs, features of the system that only apply to certain occupational programs could not be investigated. For example, evaluation measures included questions concerning support services, sex equity, mainstreaming, equipment, racial balance, and safety (issues that relate to occupational programs systemwide). Such topics as programming for particular special needs prototypes, on-the-job evaluation procedures, and school and business partnerships (items that are oriented toward subsets of occupational programs or to individual program offerings) were considered to be beyond the scope of the Boston Program Audit.

The timing of the audit was also a determinant of those components of the delivery system that could and could not be evaluated. The Boston Program Audit was conducted during the spring term of the 1979-1980 academic year. The majority of data collection activities had been completed by the end of March, 1980. Therefore, program innovations that had been instituted in response to Federal Court Order but had been phased out prior to the conduct of the Boston Program Audit (such as the middle school Career Guidance component) could not be evaluated. Equally importantly, program innovations scheduled for implementation during the 1980-1981 academic year were likewise excluded from consideration. Most notable among these is the Hubert Humphrey Occupational Resource Center (the HHORC) which opened in September, 1980.

Because the Boston Program Audit was neither intended to provide retrospective information (that is, information that attempts to reconstruct past activities) nor prospective information (that is, information

on planned programs and activities), the scope of the evaluation activities was entirely determined by the occupational education delivery system as it existed when the Boston Program Audit was undertaken (March, 1980). Parenthetically, although it is expected that the HHORC will, in time, have a significant impact on the overall capabilities of the delivery system, only a limited number of students will benefit directly from educational experiences provided by the HHORC. The majority of students will continue to be served by Boston's occupational delivery system. It is that overall system that this report describes.

3. What was the function of the Audit Team?

The Team fulfilled three important functions relative to the overall evaluation process. First, as previously noted, Team members were responsible for on-site data collection. Second, Team members collaborated in interpreting the significance of the findings and in formulating general recommendations for inclusion in the Preliminary Report. During this phase, the Team of educators, administrators, evaluators, and specialists played a major role in resolving the "half full/half empty glass" dilemma. That is, the Audit Team served as consultants to determine the significance of results that showed no clearcut consensus, or that demonstrated a high degree of inconsistency across respondent groups. For example, in a case where a minority of teachers (30% will be used for illustrative purposes) pointed out the existence of a particular problem (such as equipment safety), the Audit Team was asked to interpret whether the fact that 70% of the teachers reported that no safety problem existed represented a strength, or whether documentation of problems by the remaining teachers represented a weakness. In general, the Team concurred that despite evidence suggesting the lack of problems in the majority of cases, there was reason for concern. This interpretation guided the results that have been selected for presentation in the next chapter (in many cases representing minority reports), as well as the implications that are suggested based on the results.

Finally, a subset of the Audit Team convened to develop the specific recommendations that are contained in this report (see Chapter Four).

Representatives from this Audit Team subgroup have been selected to review the Action Plans that have been submitted by the Boston Public Schools in response to the recommendations proposed in this report. This Task Force of experts will be responsible for negotiating acceptable Action Plans and for monitoring their implementation.

4. How were the content and format of this report determined?

To a large extent, the content and format of this Audit Report are reader-oriented. For example, the report assumes that the reader has specific information needs concerning how and why the Boston Program Audit was conducted, and that understanding certain background factors will facilitate the process of interpreting and assimilating information presented in the chapters that follow. Therefore, this section of the report tries to anticipate some of the reader's questions without belaboring the technical details of the evaluation process. The interested reader can refer to Appendix B (Research Procedures) for amplification of specific features of the overall evaluation.

As described, the Audit Report intentionally departs from traditional social science research organization and format. The major distinction arises from the purpose for which the Audit Report has been developed. That purpose is action-based, and it is the reader who will develop, implement, monitor, or oversee some aspect of that action. Toward that end, the next three chapters contain, respectively, results, their implications, and recommended actions. We hope that this organizational structure will fulfill the purposes for which this report has been developed in a style that is both understandable and informative.

Figure 2.1

RELEVANT LEGISLATIVE MANDATES INVESTIGATED IN THE BOSTON PROGRAM AUDIT

COMPLIANCE ISSUE	Federal Law P.L. 94-482	State Law Chapter 74	Court Order Unified Plan	Office of Civil Rights Guidelines*(1974)
1. Equal Access to Educational Opportunities				
1.1 Race/ethnicity			X	X
1.2 Sex	X	X	X	X
1.3 Special need (including limited English proficiency)	X	X	X	X
2. Facilities and Equipment				
2.1 Up-to-date	X	X		
2.2 Architectural barriers	X			X
2.3 Special needs modifications and/or supports	X			X
3. Teacher Qualifications				
3.1 Training and retraining		X	X	
3.2 Certification		X		
3.3 Assignment on the basis of race, sex, or special need (including limited English proficiency)			X	X
4. Curriculum and Instruction				
4.1 Methods		X		
4.2 Sequencing and Integration			X	
5. Guidance				
5.1 Recruitment and placement	X	X	X	X
5.2 Counseling special populations				X
6. Work Experience (co-op, work-study, apprenticeship)				
6.1 Non-discrimination	X	X	X	X
6.2 Availability	X	X	X	X
7. Advisory Committee				
7.1 Membership composition	X	X	X	
7.2 Level of involvement	X	X	X	
8. Evaluation				
8.1 Monitoring and Compliance	X	X	X	X
8.2 Student/ Employer follow-up	X	X		

*Includes Title VI of Civil Rights Act of 1964, Title IX of Educational Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973.

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CHAPTER TWO
RESULTS

A. Introduction

The information that was collected as part of the Boston Program Audit falls into three general categories: information pertaining to the status of Unified Plan implementation; information pertaining to compliance with federal and state mandates for occupational education; and information pertaining to non-legislated aspects of occupational program functioning. These are not tidy categories into which information can be easily compartmentalized. In fact, there is significant overlap among the categories. For example, equal access to educational opportunities irrespective of race/ethnicity, sex, and handicap is a primary concern of the Unified Plan. Equal access mandates are not limited to the Unified Plan, however, but are legislated by a range of federal and state Laws, as indicated in Figure 2.1.

The extent to which a number of relevant legislative mandates overlap is illustrated in Figure 2.1. It should be noted that the compliance issues that are presented in this matrix represent those legislated areas that were investigated as part of the Boston Program Audit. Compliance issues that are common to some or all of the legislation under consideration include the following:*

- Equal access opportunities (race/ethnicity, sex, and special need);
- Facilities and equipment (modernity; barriers; and special provisions);

*The Unified Plan legislates a series of additional mandates that are not reflected in the matrix due to their specificity to the Boston Public Schools. The Boston Program Audit obtained information about these specialized mandates, and this report summarizes the status of compliance on these dimensions in a later section. The purpose of this section of the report is to indicate the more general legislative priorities that cut across a variety of federal and state laws.

- Teacher qualifications (training and retraining requirements; certification status; and assignment policies);
- Curriculum and instruction (methods, sequencing and integration);
- Guidance (recruitment and placement functions; provision of counseling to special populations);
- Work experience (non-discriminatory assignment procedures; availability of placement opportunities);
- Advisory Committee (representativeness of membership; level of involvement); and
- Evaluation (monitoring and compliance functions; and assessment of program effectiveness based on student and employer follow-up).

It is evident from Figure 2.1 that legislative mandates are, in many cases, common to more than one law. In addition to legislative interface, the status of compliance with various pieces of legislation can influence non-legislated aspects of the delivery system (although the interaction is not necessarily clearcut). For example, intra-school cynamics (among teachers, administrators, guidance staff, and students) can be affected by the presence or absence of compliance with mandates relating to recruitment and placement and availability of student support services.

Among those non-legislated features of the delivery system that the Boston Program Audit investigated are the following:

- Student attitudes toward occupational education, including expectations and interests, awareness of program opportunities, and employment orientation.
- Staff background and qualifications, including education and work experience; work load; and evaluation.
- Perceptions of the role of guidance relative to occupational program functioning.

The majority of this chapter is devoted to presenting compliance-related audit findings. The relative weight given to discussion of compliance issues is reflective of the overall audit emphasis on assessing the status of compliance in the occupational education delivery system. The chapter concludes with three sections that examine findings in areas that are not subject to legislative requirements.

Information is presented in the remainder of this chapter in both aggregate form (providing a system-wide perspective of occupational education) and broken down according to the categories indicated below (providing a sense of the prevalence of specific findings):

1) Middle School/High School;

2) Funding Source (i.e., Chapter 74--state reimbursement for vocational/occupational education; Chapter 70--state aid to education; P.L. 94-482--federal vocational/occupational education funding; and Chapter 636--state Equal Education Opportunity funding;

3) Program Cluster (i.e., Guidance/Career; Business; Trade and Industry; Home Economics; Health; Agriculture; Marketing and Distribution; Technical; Special Needs; and Other); and

4) District.

This report's organizational framework distinguishes between legislated and nonlegislated aspects of occupational programming and incorporates both broad-based and fine grained analyses in order to facilitate the reader's understanding of the relative significance of the results that are presented, as well as their dimensions and their prevalence.

B. Racial/Sex Desegregation

1. Introduction

According to Federal Court Order and relevant access legislation (Office of Civil Rights Guidelines for vocational programs, 1979; Chapter 622 of the Acts of 1971, Massachusetts General Law), the Boston Public Schools and each occupational program offering are prohibited from discriminatory practices based on "race, color, sex, religion or national origin." Racial and sex desegregation within occupational education in Boston are clearly established priorities of the Unified Plan. For this reason, a major objective of the Boston Program Audit was to assess the status of racial/sex desegregation in Boston's occupational programs, using guidelines established by the Court to measure violations. The activities undertaken to obtain occupational enrollment information are fully detailed in Appendix B. However, a short background description of the data collection procedures is provided here in order to make the findings more interpretable.

A data collection form, similar to that used to gather October 1, 1979 enrollment information state-wide and U.S. Office of Civil Rights information nation-wide, was devised for completion by teachers in occupational program areas system-wide (a copy of this demographic form is provided in Appendix C). Teachers were asked to complete the following information about students enrolled in all classes within the designated program area (e.g., Typewriting, all levels; Industrial Arts; Career Education):

- Number of students at each grade level by racial/ethnic designation and sex;
- Classification of handicap/disadvantage/limited English proficiency/other/"regular" for enrolled students, by sex and grade.*

A similar form was created to gather the identical information (i.e., race/ethnicity, sex, grade, handicap classification) about the total school population. In addition, the form requested race/ethnicity and sex characteristics for the teachers of occupational programs in the school.**

Packets of demographic forms were forwarded to schools for completion during the week preceding the on-site visitation. On-site observers were instructed to pick up completed forms from the schools and the programs undergoing evaluation during on-site visitation. Observers were provided with extra forms in the event that teachers had misplaced the original forms.

This relatively simple data collection scheme underwent a series of setbacks. Many of the forms that were to have been delivered to teachers in advance were never received and/or distributed due to inconsistent

*Copies of Office of Civil Rights categories of handicap/disadvantage/LEP, which provided definitions to be followed in classifying students, were sent to the schools along with demographic forms and instructions for their completion.

**It should be noted that the instructions for completing the forms included the definition of "occupational program," its parameters consistent with the broad scope of the Boston Program Audit. This definition is as follows: "Occupational program: a planned sequence of course work and activities designed to meet objectives which are stated as career exploration and/or pre-vocational or entry-level skills training."

cooperation with the form dispersal schedule across districts. Therefore, only a handful of completed forms was ready at the time of the on-site visitation in late March, and hundreds of demographic forms were left behind at the schools. The persistence of Central Office and district staff, who cooperated in the retrieval of the missing demographic information, resulted in the last of the completed forms being returned in mid-June, a full two and one-half months after the audit took place. This data collection effort was characteristically unpopular system-wide, perceived as unnecessary or duplicative paper work by some, and as a time consuming and inappropriate activity by others. Varying degrees of cooperation/resistance were encountered during the three months required to collect the demographic data.

Before proceeding to a discussion of the demographic data themselves, a few caveats about the accuracy of the information need to be raised.* First, the forms were typically returned with a variety of errors and/or omissions. Five basic types of error/omission were observed: arithmetic error; failure to classify students by sex; unspecified grade of students; incomplete handicapped, disadvantaged, LEP categories; and failure to provide information altogether. Of the forms returned during the month that followed their original request, only one high school and five middle schools had submitted error-free school-wide demographic forms. In three of the nine districts, 100% of the school-wide forms reflected one or more errors.

Across districts, an average of 78% of middle school demographic forms and 59% of high school demographic forms retrieved by the end of April contained one or more errors. Because the most frequent errors (both arithmetic and omission) occurred in the categories of handicap/disadvantage/LEP, it was decided to omit these areas from discussion in

*Enrollment data were requested for October 1, 1979, and for March 15, 1980, but only the October 1st enrollments will be reported. The decision to report October instead of March enrollments, or some combination of the two, was made for two reasons. First, it was felt that because October 1st enrollments had been requested state-wide, these data might be more accessible and thoughtfully completed. Second, there was a large amount of missing data for the March 15th program enrollments.

reporting the demographic data.* The extent to which errors were detected among the demographic data that are discussed, however, should be kept in mind while reviewing the results.

The second problem with the demographic data did not become apparent until the enrollment information collected for occupational programs was compared with figures supplied for the total school population. Examination of the total number of students enrolled in occupational programs system-wide, relative to the total population of students system-wide, revealed a discrepancy of 21,000, with students enrolled in occupational programs exceeding the total school population by that margin.

A re-examination of the data and our computations ruled out error in data processing as a source of the numerical discrepancy. Two logical explanations seem to remain. First, the reported differences between occupational program enrollments and total school enrollments might be a function of cumulative arithmetic error. That is, each of the individual arithmetic errors noted as the forms were received might combine to produce overall discrepancy when the data are added for programs and schools, and the totals compared. It seems unlikely, however, that arithmetic error is entirely responsible for a discrepancy of this magnitude.

A second explanation is suggested by an examination of where the discrepancies were most likely to occur. An analysis by school revealed that in 89% of the high schools, compared with 38% of the middle schools, the total school population was reported to be less than the combined enrollment for occupational programs. The rather obvious explanation for this phenomenon is that high school students are more likely than middle school students to enroll in multiple occupational programs, particularly in exploratory content areas. In addition, occupational programming is required for all ninth grade students. Occupational program enrollment data are neither centrally maintained nor organized on a unit basis (that is, with each individual student as the information unit, and that

*This decision was made in conjunction with Commissioner Anrig and Associate Commissioner Cronin after thorough review of the problems associated with the collection and accuracy of the demographic data.

student's program enrollment(s) associated with his/her ID number), and were, as noted earlier, collected from occupational instructors who provided data for all classes in a basic program area. It therefore seems inevitable that duplicative data (that is, information that reflects counts of the same students in all occupational program areas in which they are enrolled) would exaggerate the total number of enrolled students, particularly in high schools.

Middle schools, on the other hand, theoretically should exhibit an occupational program enrollment total that is equivalent to the total student population, due to the required nature of occupational programming at the middle school level. Yet 62% of the middle schools reported school populations larger than the total enrollment in occupational programs. It may be that scheduling prohibits the simultaneous enrollment of all students in some occupational program. This explanation seems to warrant further investigation, particularly given the priority status devoted to occupational programming at the middle school level by the Unified Plan.

Given the nature of the problems encountered with the demographic data, the analyses necessarily focus on percentages of students rather than on absolute numbers.

2. Racial/Ethnic Distribution of Students

In Table 2.1, the relative percentages of total school enrollment and occupational program enrollment are shown according to race/ethnicity. The overall differences between occupational program and school enrollment for the various racial/ethnic groups are not substantial. The greatest discrepancy occurs in the "Black, not Hispanic" category. A higher percentage of black students are enrolled (or multiply enrolled) in occupational programs system-wide than are enrolled in the schools as a whole. Blacks could either be taking more occupational programs concurrently than other students, or more blacks could be taking occupational programs than are pursuing non-occupational programs overall. Unless data are collected and stored on a unit basis, it is virtually impossible to disentangle the explanation.

Table 2.1
Percentage of Students in School Population and Occupational Programs, by Race/Ethnicity

Characteristics of Student Population	Percentage of Student Enrollment	
	Schools	Occupational Programs
	%	%
American Indian/ Alaskan Native	0.4	0.2
Asian/Pacific Islander	3.1	2.6
Black, Not Hispanic	46.1	50.1
Hispanic	11.3	11.9
White, Not Hispanic	39.1	35.2

a. Analysis of Racial Desegregation by School District

Admissions policies are closely linked to neighborhood race/ethnicity in all but city-wide programs in District 9 and cooperative and magnet programs elsewhere (which must conform to Federal Court ordered city-wide ratios of racial/ethnic balance). Since the acceptable range of racial/ethnic occupational program composition varies from district to district, analysis of demographic data by district was required in order to meaningfully assess compliance with Unified Plan race/ethnicity and sex desegregation goals. Table 2.2 presents the Department of Implementation formulas for the nine Boston school districts by three groups: Black, White and Other (Hispanic, Indian, and Asian). Within each district an acceptable range has been established for each category of race/ethnicity, with the ideal percentage for each group falling directly between the two extremes.

Deviation from district race/ethnicity formulas at the school level was found in every district, although not in every school. Table 2.3 summarizes the information on violations of the district formulas for the 44 Boston Schools from which demographic data were obtained. From this table, the following facts emerge:

Table 2.2
District Formulas* for Racial/Ethnic Groups

	Black	White	Other (Hispanic Indian, Asian)
District 1			
High	44%	38%	44%
Ideal	35	30	35
Low	26	22	26
District 2			
High	55	39	31
Ideal	44	31	25
Low	33	23	19
District 3			
High	60	59	6
Ideal	48	47	5
Low	36	28	4
District 4			
High	75	46	4
Ideal	60	37	3
Low	45	28	2
District 5			
High	76	36	13
Ideal	61	29	10
Low	46	22	7
District 6			
High	44	60	21
Ideal	35	48	17
Low	26	36	13-
District 7			
High	51	31	43
Ideal	41	25	34
Low	31	19	25
District 8			
High	3	99	8
Ideal	2	92	6
Low	1	69	4
District 9			
High	50	43	18
Ideal	45	39	16
Low	40	35	14

*The formulas provide for an ideal percentage for each group by district, as well as an acceptable upper limit ("high") and lower limit ("low").

- The most prevalent types of violation at the school level are overrepresentation of blacks (32% of the schools); underrepresentation of whites (30% of the schools); and underrepresentation of other minorities (30% of the schools).

- The districts with the highest rate of violation were Districts 5 (100% of the schools), 8 (100%), and 7 (80%). The district with the lowest rate was District 1 (25% of the schools).

- A total of 52 violations were found--an average of 1.2 per school. Since each school could commit a maximum of three violations (one for each racial/ethnic group), the findings indicate that violations were committed nearly four times for every 10 "opportunities" to commit a violation.

- The highest percentage of all violations occurred in District 9 (23% of all violations)*; the lowest percentage occurred in Districts 1 and 3 (6% each).

One aspect of the school-based violations that Table 2.3 fails to show is the magnitude of the violation. That is, a school that is 20% away from the upper or lower limit is counted the same as a school that is 1% away from the limit. A further analysis of the data reveals that of the 52 violations, a total of 11 (21%) involved a violation of 10% or more above or below the limit in question.

The Boston Program Audit was not intended to highlight overall racial segregation among the total school populations of Boston's public schools. However, it is within the context of the data presented above that the findings on segregation at the occupational program level take on special meaning. Table 2.4 presents information on violations from district formulas within occupational programs, analagous to the information presented for schools in Table 2.3. An examination of this table reveals the following findings:

- The vast majority of occupational programs (90%) have 1 or more violation in terms of district racial/ethnic norms.

*District 9 accounts for such a high percentage of violation primarily because of the large number of schools there (N=13). It must be remembered, however, that the goals of racial/ethnic desegregation determine eligibility for admission to District 9 schools. Therefore, the findings that these district schools demonstrate any violation of the mandated racial/ethnic formula merits attention.

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Table 2.3
Summary of Violations from District Racial Formulas
for 44 Boston Schools, by District

	Blacks				Whites				Other				Total No. of Violations	Percent of Schools with a Violation	Percent of max. possible violations* per district	Percent of all violations**
	Schools Below Lower Limit		Schools Above Upper Limit		Schools Below Lower Limit		Schools Above Upper Limit		Schools Below Lower Limit		School Above Upper Limit					
	N	%	N	%	N	%	N	%	N	%	N	%				
Dist. 1 (N=4)	0	0%	1	25%	1	25%	0	0%	1	25%	0	0%	3	25%	25%	6%
Dist. 2 (N=3)	0	0%	1	33%	1	33%	0	0%	1	33%	1	33%	4	67%	44%	8%
Dist. 3 (N=4)	0	0%	2	50%	0	0%	0	0%	1	25%	0	0%	3	50%	25%	6%
Dist. 4 (N=3)	0	0%	1	33%	1	33%	0	0%	2	67%	0	0%	4	67%	44%	8%
Dist. 5 (N=5)	0	0%	1	20%	4	80%	1	20%	1	20%	1	20%	8	100%	53%	15%
Dist. 6 (N=4)	0	0%	2	50%	1	25%	0	0%	2	50%	0	0%	5	50%	42%	10%
Dist. 7 (N=5)	0	0%	2	40%	3	60%	1	20%	1	20%	1	20%	8	80%	53%	15%
Dist. 8 (N=13)	0	0%	2	67%	0	0%	0	0%	3	0%	0	0%	5	100%	56%	10%
Dist. 9 (N=3)	1	8%	2	15%	2	15%	1	8%	2	15%	4	30%	12	46%	31%	23%
TOTAL (N=44)	1	2%	14	32%	13	30%	3	7%	14	30%	7	16%	52	61%	39%	100%

*This calculation divides the number of violations committed in the district by the maximum possible number of violations--3 per school.

**This calculation divides the number of violations committed in the district by the total number of violations committed systemwide (52).

- The most prevalent types of violation at the occupational program level are overrepresentation of blacks (43% of the programs); underrepresentation of whites (45% of the programs); and underrepresentation of other minorities (54% of the programs).

- Two of the nine school districts (4 and 8) have no occupational program that does not commit at least one violation.*

- A total of 839 violations were found--an average of 2.0 per program. With a maximum of three violations possible, violations at the occupational program level were therefore committed twice for every three "opportunities".

- Within each district, if we examine the number of committed violations relative to the total number of "opportunities" for violation (three per program), Districts 2 (75%), 4 (73%), and 7 (74%) have the worst record; District 3 (41%) has the best record.

- The highest percentage of all violations occurred in District 9 (30.5% of all violations**); the lowest percentage occurred in Districts 3 (4.9%) and 1 (6.7%).

Once again, the data in the table fail to provide information on the magnitude of the violations. Of the 839 violations committed at the program level, 347 (41%) involved a violation in excess of 10% from the upper or lower limit in question.

On the basis of any of the various indices of segregation used in these analyses, it is clear that racial segregation is more prevalent within occupational programs than it is within the school system overall. The rate of violation is higher at the program level than at the school level in nearly every school district; the rate is substantially higher in each of the 6 categories of violation. Whereas 60% of the schools have a

*It must be noted, however, that in both these districts the district formula for at least one racial group specifies a range so narrow that compliance at the program level is extremely difficult, if not impossible. For example, in District 8 the formula for blacks is 1-3%. In a program with 20 students, the program would be in violation no matter how many black students were enrolled (0/20 = 0%; 1/20 = 5%).

**District 9 accounts for such a high percentage of program violations primarily because of the large number of programs there (N=126).

Table 2.4
Summary of Violations from District Racial Formulas
for 418 Occupational Education Programs, by District

	Blacks				Whites				Other							
	Programs Below Lower Limit		Programs Above Upper Limit		Programs Below Lower Limit		Programs Above Upper Limit		Programs Below Lower Limit		Programs Above Upper Limit		Total No. of Violations	Percent of Programs with a Violation	Percent of max. possible violations* per district	Percent of all violations**
	N	%	N	%	N	%	N	%	N	%	N	%				
Dist. 1 (N=29)	0	0%	16	55%	9	31%	12	41%	20	69%	0	0%	57	87%	66%	6.7%
Dist. 2 (N=31)	0	0%	18	58%	22	71%	3	10%	18	58%	9	29%	70	77%	75%	8.3%
Dist. 3 (N=33)	1	3%	8	24%	4	12%	2	6%	19	58%	7	21%	41	85%	41%	4.9%
Dist. 4 (N=28)	5	18%	10	35%	11	39%	8	29%	21	75%	6	21%	61	100%	73%	7.3%
Dist. 5 (N=59)	5	8%	27	46%	39	66%	7	12%	32	54%	13	22%	123	95%	69	14.7%
Dist. 6 (N=39)	7	18%	19	49%	13	33%	7	18%	26	67%	2	5%	74	85%	63%	8.8%
Dist. 7 (N=40)	5	13%	22	55%	25	63%	12	30%	21	53%	4	10%	89	93%	74%	10.6%
Dist. 8 (N=33)	5	15%	23	70%	10	30%	3	9%	22	67%	5	15%	68	100%	69%	8.1%
Dist. 9 (N=126)	37	29%	38	30%	55	44%	29	23%	48	38%	49	39%	256	87%	68%	30.5%
TOTAL (N=418)	65	16%	181	43%	188	45%	83	20%	227	54%	95	23%	839	90%	67%	100%

*This calculation divides the number of violations committed in the district by the maximum possible number of violations--3 per program.

**This calculation divides the number of violations committed in the district by the total number of violations committed systemwide (839).

violation, 90% of the programs have committed one.* The rate at which violations are committed in relation to "opportunities" to commit them is nearly twice as high at the program level as it is at the school level (67% versus 39%). Severe deviations (greater than 10%) are nearly twice as frequent within occupational programs (41%) than within schools (21%).

Segregation within occupational programs is apparent at two levels. First, at the macro level, it is clear that blacks are disproportionately represented in occupational programs overall (and are therefore underrepresented in non-occupational programs). This is evident from the fact that overrepresentation of blacks occurs in 32% of the schools, and in a larger percentage (43%) of the programs. Table 2.1 also shows that blacks are somewhat overrepresented in occupational programs. Second, the data from the audit reveal that even within occupational programming, the programs tend to be segregated by race. Thus, while white students are underrepresented in occupational programs both systemwide and within districts, 20% of all programs nevertheless have violations with whites being overrepresented. This type of violation will become more evident in subsequent discussion of segregation within program clusters.

Looking at the districts comparatively, Districts 1 and 3 have relatively good records of racial desegregation at both the school and program level. The districts that have relatively poor records of violation for both schools and occupational programs are 5 and 7. District 2, which has an average performance at the school level, has the poorest record for violations within occupational programs.

b. Analysis of Racial Desegregation by Program Cluster

The demographic data were also analyzed to examine patterns of over- and underrepresentation of racial/ethnic groups within specific occupational-program areas. Table 2.5 presents the system-wide percentages of

*It must be pointed out, however, that meeting the district formulas is more difficult at the program level than at the school level. With smaller numbers of students in question at the program level, adding or subtracting 1-2 students could change the percentage of students in a racial/ethnic group by 5-10%.

Table 2.5
Average Percentages of Students in Program Clusters
by Ethnic Group

Program Cluster	Average % Black	Average % White	Average % Hispanic	Average % Asian	Average % Am. Ind.
Guidance/ Career (N=24)*	52.04	33.49	12.17	1.98	.32
Business (N=162)	52.88	35.55	10.31	1.14	.11
Trade/ Industry (N=104)	49.28	38.06	10.33	2.13	.19
Home Economics (N=39)	59.48	24.58	13.02	2.78	.14
Health (N=10)	46.09	20.91	32.72	.27	.00
Agriculture (N=3)	45.89	48.03	6.08	.00	.00
Distrib./ Mktg. (N=10)	40.34	50.64	8.35	.00	.67
Technical (N=42)	54.74	28.23	13.82	3.03	.18
Special Needs (N=24)	40.08	34.75	24.71	.10	.34
Other (N=3)	43.15	44.50	12.35	.00	.00
Total (N=421)	50.10	35.20	11.90	2.60	.20

*N=the number of programs in the program cluster

students in 10 occupational clusters, according to racial/ethnic classification. This table indicates that across all districts, black students in occupational programs tend to be overrepresented in the Home Economics and Technical clusters and underrepresented in Health, Agriculture, and Distributive programs. For white students, the pattern is essentially reversed. There are disproportionately more whites in the Agricultural and Distributive programs than in occupational programs as a whole, while there are disproportionately fewer whites in the Home Economics, Health, and Technical clusters. Hispanic students are overrepresented in Health programs and underrepresented in Agriculture and Distributive programs. The other two groups are too small to determine reliable enrollment trends.

Further analysis of program-level data by district was performed to investigate instances of non-compliance with district formulas at the program cluster level. Figures 2.2a-2.2e show, for each of the nine Boston school districts, whether the percentage of students in the three racial/ethnic groups (black, white and other) fell within the acceptable district limits; above the upper limit, or below the lower limit in each program cluster.*

These figures reveal several trends. First, we find further evidence that noncompliance is not uniformly distributed across the nine districts. The districts that had the highest percentage of program-specific imbalances were Districts 7 (67%**) and District 8 (67%). The district with the lowest proportion of violations at the program cluster level was District 3 (29%). This finding is fairly consistent with the results for occupational programs overall, as shown in Table 2.4.

Second, the figures add a new perspective to the issue of specific areas of imbalance for the three racial/ethnic groups. Table 2.6 summarizes the instances of non-compliance with district formulas for nine

*Special needs programs are not included among these areas since district formulas are not immediatey relevant to occupational programs composed entirely of special needs students.

**This calculation is based on the number of instances of over/underenrollment of any racial ethnic group, divided by the total possible number of instances. In this case, the calculation was 12/18 = .67.

Figure 2.2a

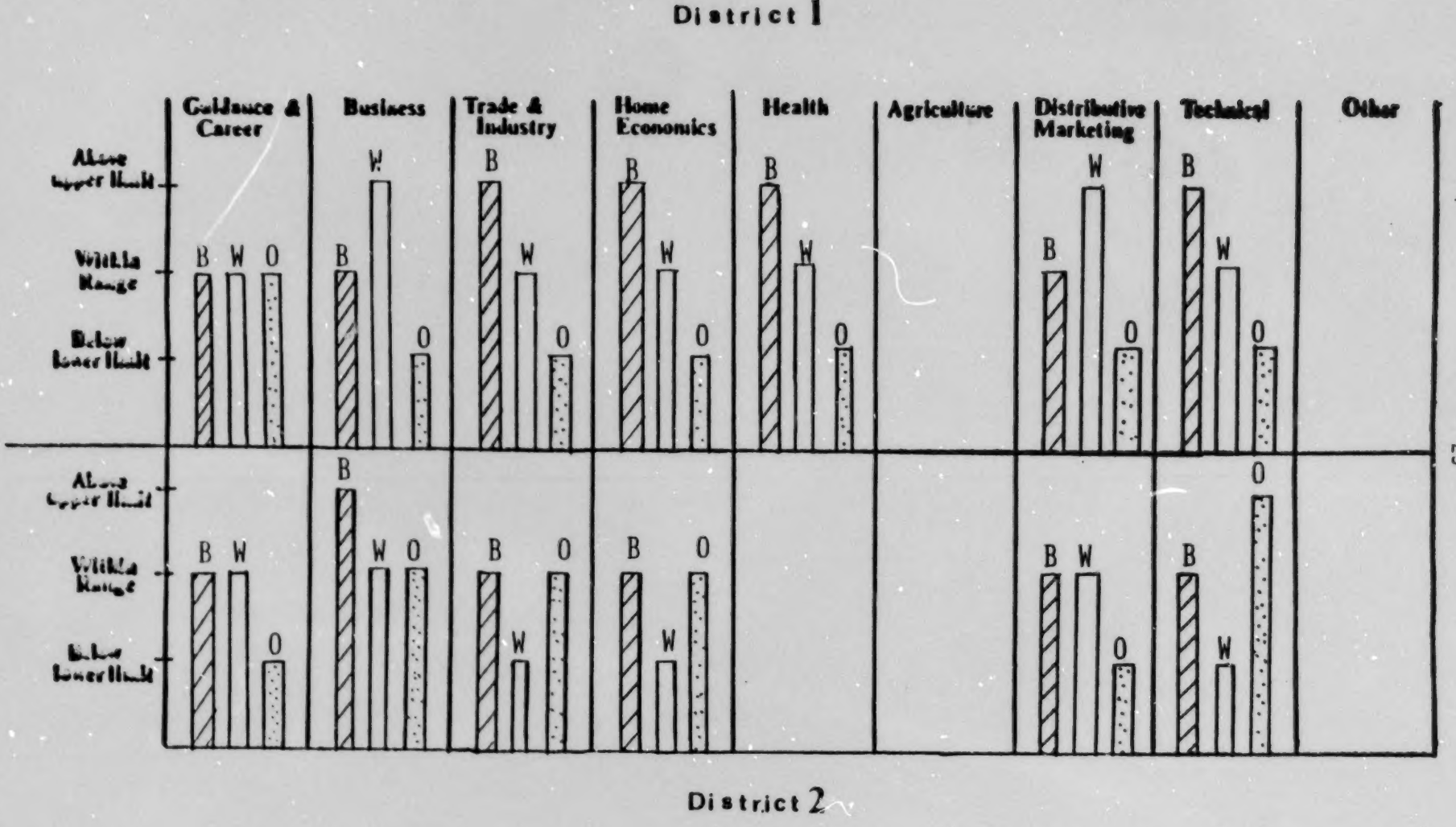

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Figure 2.2b

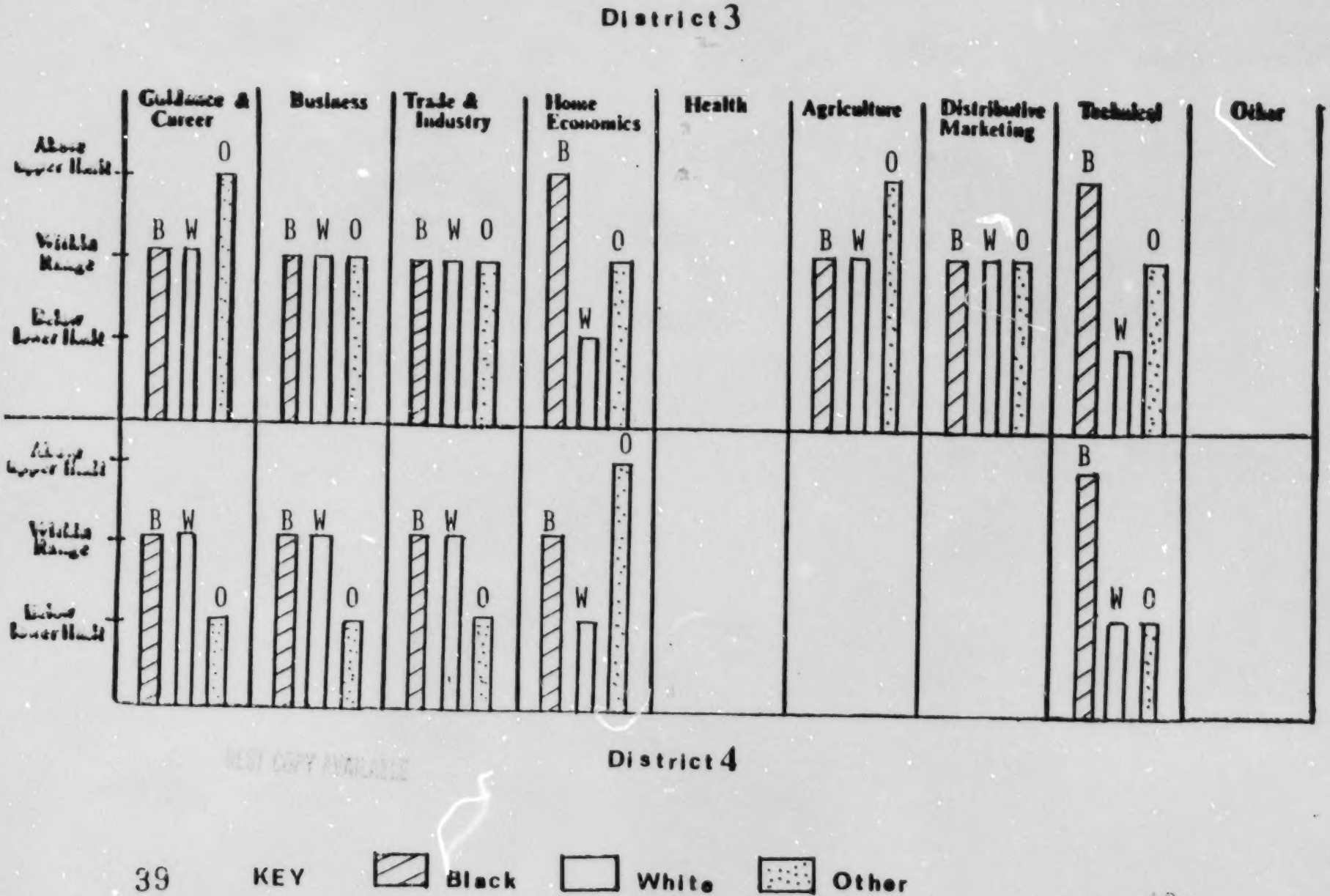

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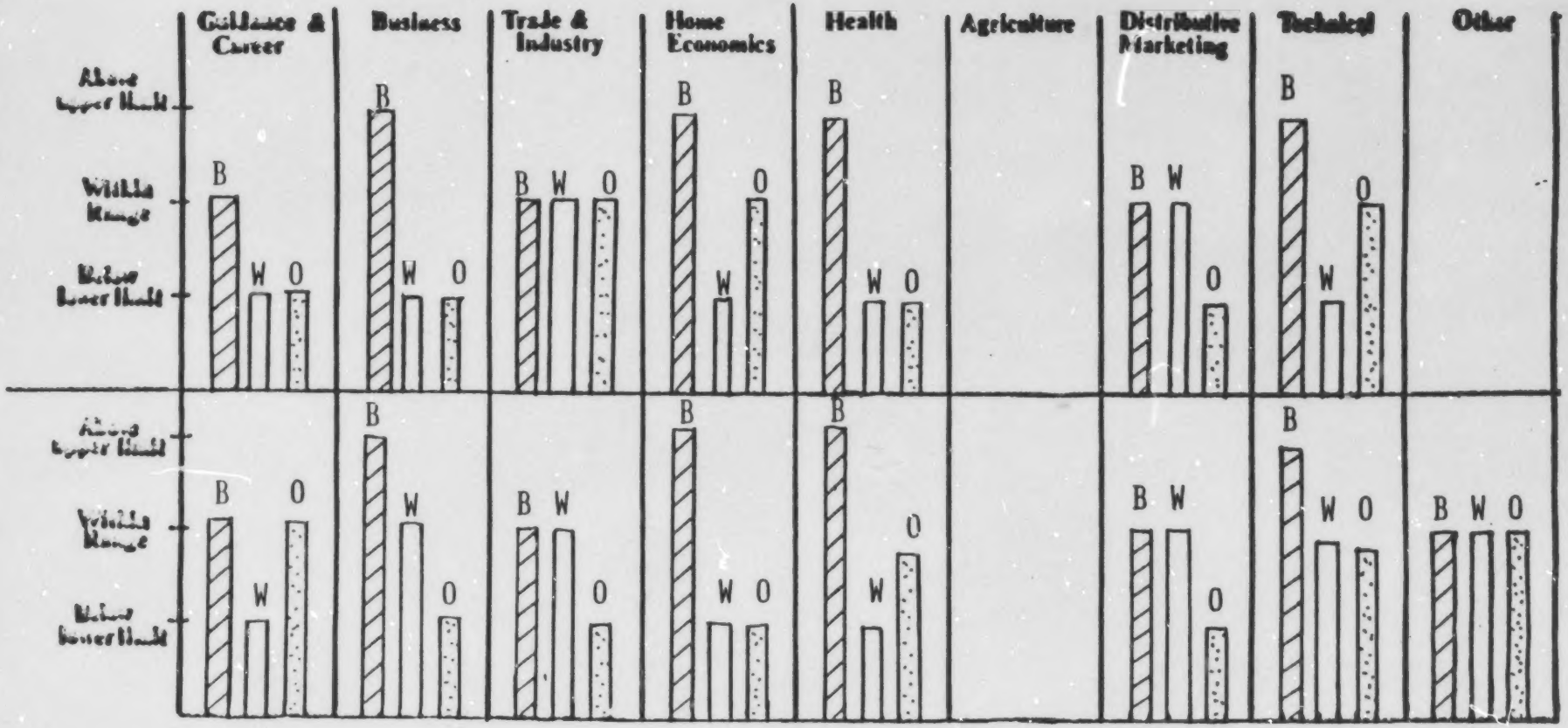
Figure 2.2c

District 5



District 6

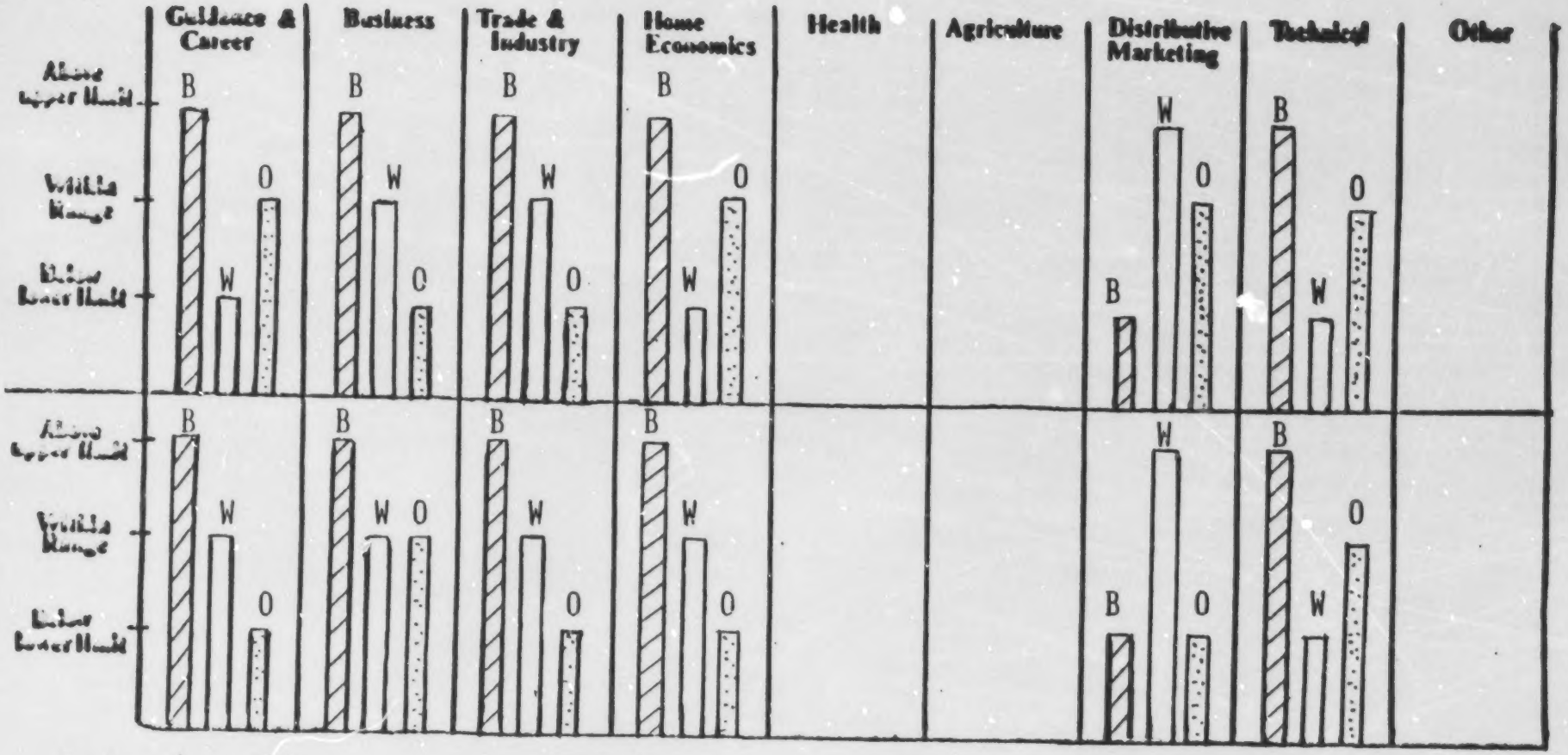
41

KEY Black White Other

42

Figure 2.2d

District 7



District 8

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KEY Black White Other

Figure 2.2e

District 9

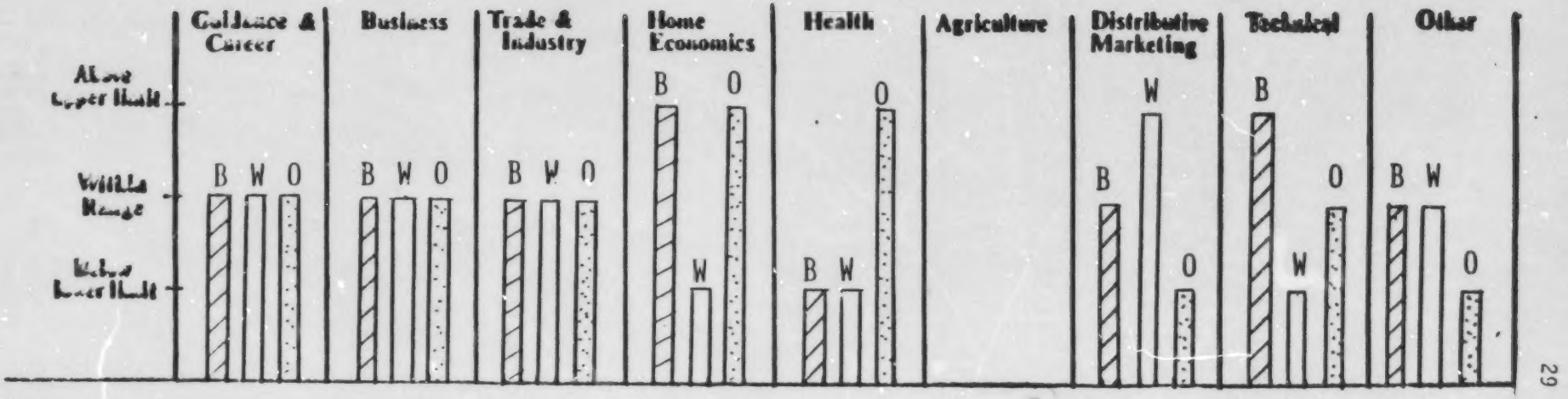

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Table 2.6
Number of Districts with Over/Underrepresentation of Racial/Ethnic Groups, by Program Cluster

Program Area	Black		White		Other	
	Above	Below	Above	Below	Above	Below
Guidance and Career (N=9)*	2	0	0	2	1	4
Business (N=9)	5	0	1	1	0	5
Trade and Industry (N=9)	3	0	0	1	0	5
Home Economics (N=9)	7	0	0	7	2	3
Health (N=4)	3	1	0	3	1	2
Distribution/ Marketing (N=8)	0	2	4	0	0	6
Agriculture (N=1)	0	0	0	0	1	0
Technical (N=9)	8	0	0	6	1	3
Other (N=2)	0	0	0	0	0	1

*Number of districts with program offerings in the program area.

program clusters. Overall, the areas that are most susceptible to racial imbalances are the Home Economics and Technical clusters. Relative to district norms, blacks are particularly likely to be overrepresented in these two areas. Blacks and, especially, other minority students are underrepresented in Marketing and Distribution, the one program area in which whites are most likely to be overenrolled. The program areas that most consistently conform to admission formulas are Guidance and Career, Agriculture, and Trade and Industry.

3. Sex Distribution of Students

According to the Boston Program Audit data, males represent 51.4% of the middle and high school population for the Boston schools overall. Both sexes are essentially proportionately represented in occupational programs, with males constituting 52.6% of the students in occupational programs. While males and females are not disproportionately represented in occupational programs overall, they tend to enroll in different program areas. Table 2.7 presents the average percentage of males and females enrolled in 9 program areas. As this table shows, Trade and Industry is the program area with the highest concentration of males, and Health and Home Economics are areas with a high female enrollment.

Table 2.7
Distribution of Males and Females in
Occupational Program Areas

Occupational Cluster	Average Percentage of Males and Females Enrolled in Specific Occupational Program Areas	
	Males	Females
	%	%
Guidance and Career	56.0%	44.0%
Business and Office	48.1%	51.9%
Trade and Industry	89.7%	10.3%
Home Economics	36.2%	63.8%

Occupational Cluster	Males	Females
	%	%
Health	7.6%	92.4%
Agriculture	58.3%	41.7%
Marketing and Distribution	45.0%	55.0%
Technical	48.9%	51.1%
Other	49.0%	51.0%
TOTAL	52.6%	47.4%

a. Analysis of Sex Desegregation by Program Cluster

Although the Unified Plan indicates the desirability of a 50:50 male/female ratio, it is more realistic to establish as a goal a wider range for the sex distribution of students. For the analyses of sex desegregation, we have used as an index of acceptability a ratio of 65:35.* In other words, programs that have enrollments of more than 65% of one sex will be considered to be sex-segregated.

Table 2.8 summarizes the analysis of sex segregation violations (using the 65:35 criterion) for occupational programs within 10 program areas. As this table indicates, approximately half (49%) of all the occupational education programs in the Boston School System are sex-segregated. The areas with the highest proportion of sex-segregated programs are Health (90% of all programs), Home Economics (56% of programs), and Business (54% of programs). Sex segregation seems most prevalent among those programs that are considered traditionally female. The areas with the best male/female balance are Guidance and Career and Marketing and Distribution.

*The Unified Plan suggests that special efforts be made to enroll students of the underrepresented sex when program enrollments do not fall within 65:35 limits (p.10).

Table 2.8
Summary of Violations 65:35
Sex Distribution Standard for Occupational Education Programs,
by Program Area

Program Area	Programs with fewer than 35% girls		Programs with more than 65% girls		Percentage of programs with a sex segregation violation	Percentage of programs without a sex segregation violations	Percentage of all sex segregation violations
	N	%	N	%			
Guidance & Career (N=21)	2	9.5%	0	0.0%	9.5%	90.5%	1.0%
Business (N=162)	32	19.8%	56	34.6%	54.3%	45.7%	43.1%
Trade (N=104)	47	45.2%	3	2.9%	48.1%	51.9%	24.5%
Home Economics (N=39)	0	0.0%	22	56.4%	56.4%	43.6%	10.8%
Health (N=10)	0	0.0%	9	90.0%	90.0%	10.0%	4.4%
Agriculture (N=3)	1	33.3%	0	0.0%	33.3%	66.7%	.5%
Distributive Marketing (N=10)	0	0.0%	3	30.0%	30.0%	70.0%	1.5%
Technical (N=41)	10	24.4%	6	14.6%	39.0%	61.0%	7.8%
Special Needs (N=23)	9	39.1%	4	17.4%	56.5%	43.5%	6.4%
Other (N=3)	0	0.0%	0	0.0%	0.0%	56.5%	0%
TOTAL (N=416)	101	24.3%	103	24.8%	49.0%	51.0%	100.0%

*This calculation represents the number of violations for the program area divided by the total number of violations (204).

Some interesting findings emerge when the composition of program areas is analyzed by both race and sex. Table 2.9 shows the average percentage of students enrolled in the various occupational program areas, by three racial groups (black, white and other) and sex. It may be recalled from the preceding discussion on racial segregation that Home Economics and Health programs (traditional female areas) had a higher incidence of deviation from district norms than other program areas. This finding led us to speculate about the possibility of double segregation--i.e., that black females might be especially overrepresented in those areas that are female-dominated and that tend to lead to the least well-paid employment opportunities. As Table 2.9 indicates, it is the black males that are disproportionately overenrolled in Health and Home Economics programs. Whereas 53% of all males in occupational programs overall are black, 66% of the males in Health programs and 65% of those in Home Economics programs are Black. White girls, on the other hand, tend to be underenrolled in the Health and Home Economics area, with 30.5% of all females in occupational programs being white, while 23% of the girls in Health and 25% of the girls in Home Economics are white. White students of both sexes are overenrolled in both Marketing and Distribution and Agriculture.

b. Analyses of Sex Desegregation by District

Across all program areas, districts were not uniform in the extent to which programs were sex-segregated. Table 2.10 shows the percent of programs in each district that violated the 65:35 standard. District 5, which had a poor record in terms of racial segregation, had the lowest percentage of sex segregation violations (24.6%). Districts 1 and 3, which had the best ranking on racial segregation, also had a relatively low percentage of sex-segregated programs (37.9% and 31.3%, respectively). The district with the worst performance in sex segregation was District 8, with 81.8% of all programs imbalanced in terms of their sex composition. District 2 similarly had the poorest record for racial segregation within occupational programs.

Table 2.9
Average Percentages of Students Enrolled in 10 Occupational Program Areas, by Race/Ethnicity and Sex

Program Area	Males			Females		
	Black	White	Other	Black	White	Other
Guidance and Career (N=21)	53.3%	32.2%	14.5%	56.3%	29.0%	14.7%
Business (N=142)	56.8%	32.9%	10.3%	56.4%	30.8%	12.8%
Trade and Industry (N=102)	46.9%	39.9%	13.2%	56.8%	30.8%	12.4%
Home Economics (N=34)	64.6%	21.2%	14.2%	59.0%	25.2%	15.8%
Health (N=8)	65.9%	19.8%	14.3%	42.1%	23.4%	34.5%
Agriculture (N=3)	46.7%	45.8%	7.5%	43.9%	50.0%	6.1%
Distributing/ Marketing (N=10)	36.5%	49.0%	14.5%	45.0%	49.3%	5.7%
Technical (N=40)	56.6%	27.4%	16.0%	55.3%	28.0%	16.7%
Special Needs (N=23)	40.4%	34.9%	24.7%	40.8%	34.3%	24.9%
Other (N=3)	38.4%	49.7%	11.9%	50.2%	36.4%	13.4%
TOTAL (N=386)	53.1%	33.6%	13.3%	54.9%	30.5%	14.6%

*These figures represent the average of the percentages of males (or females) within each racial group enrolled in programs in the specified program area. For each sex, the percentages within a program area add to 100% (53.3% + 32.2% + 14.5% = 100.0%)

Table 2.10
Summary of Violations of 65:35 Sex Distribution Standard for 425 Occupational Education Programs, by School District

Program Area	Programs with fewer than 35% girls		Programs with more than 65% girls		Percentage of programs with a sex segregation violation	Percentage of programs without a sex segregation violation	Percentage of all sex segregation violations*
	N	%	N	%			
District 1 (N=29)	4	13.8%	7	24.1%	37.9%	62.1%	5.3%
District 2 (N=41)	9	22.0%	9	22.0%	43.9%	56.1%	8.6%
District 3 (N=32)	4	12.5%	6	18.8%	31.3%	68.8%	4.8%
District 4 (N=28)	6	21.4%	9	32.1%	53.6%	46.4%	7.2%
District 5 (N=61)	7	11.5%	8	13.1%	24.6%	75.4%	7.2%
District 6 (N=37)	10	27.0%	8	21.6%	48.6%	51.4%	8.6%
District 7 (N=40)	6	15.0%	12	30.0%	45.0%	55.0%	8.6%
District 8 (N=33)	22	66.7%	5	15.2%	81.8%	18.2%	12.9%
District 9 (N=124)	36	29.0%	41	33.1%	62.1%	37.9%	36.8%
TOTAL (N=425)	104	24.5%	105	24.7%	49.2%	50.8%	100.0%

*This calculation represents the number of violations for the district divided by the total number of violations (209).

In sum, sex-segregated programs are common within Boston's occupational education system. There are sex-segregated programs in every program area and in every school district. However, sex imbalance in these programs is less severe than racial imbalances, at least in terms of the criteria used here to assess violations.

4. Distribution of Instructional Staff by Race/Ethnicity and Sex

Information about the demographic characteristics of the instructional staff in occupational programs was also obtained as part of the Boston Program Audit. Table 2.11 presents the profile of the occupational staff in terms of race/ethnicity and sex.

Table 2.11
Percentage of Male and Female Occupational Instructional Staff, by Race/Ethnicity

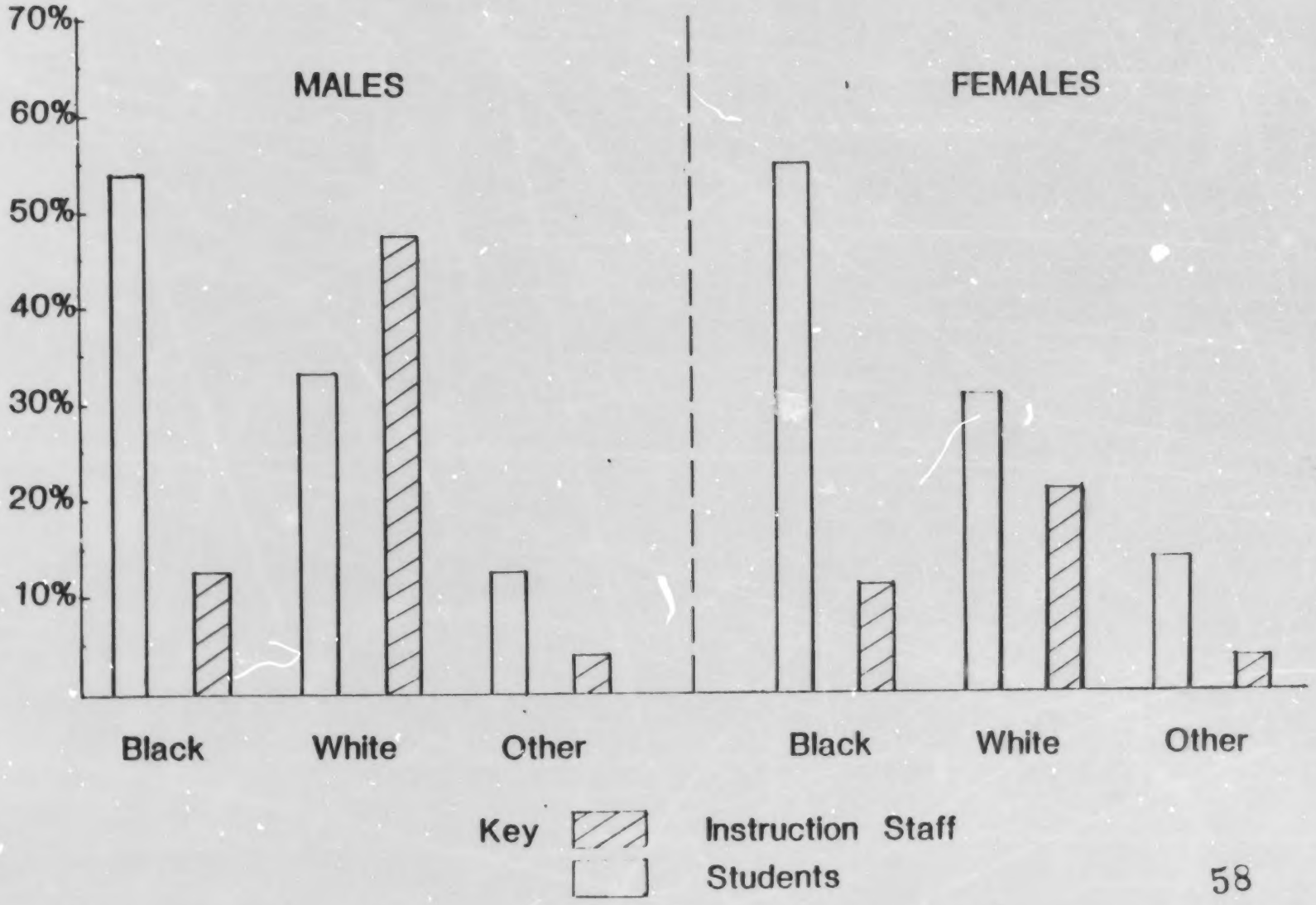
Race/Ethnicity	Male (N=320)	Female (N=175)	Total (N=495)
American Indian/Alaskan Native	.2%	0%	.2%
Asian/Pacific Islander	.2%	.2%	.4%
Black/Not Hispanic	13.3%	11.6%	24.9%
Hispanic	3.0%	2.6%	5.6%
White	47.9%	21.0%	68.9%
TOTAL	64.6%	35.4%	100.0%

This table indicates that the majority of the occupational education instructional staff is white; nearly half are white males. These figures contrast sharply with the composition of the student body in occupational programs. A comparison of the demographic characteristics of students and faculty is shown in Figure 2.3. Despite the minority hiring policy that has reportedly been in effect for some time, imbalanced racial/ethnic representation continues to characterize the instructional staff.*

*We should note, however, that the Boston Public Schools have satisfied the Federal Court Order affirmative action guidelines for minority faculty recruitment and hiring issued on January 23, 1975.

Figure 2.3

Comparison of Student and Faculty Demographic Characteristics



5. Conclusion

The demographic data collected for the Boston Program Audit indicate that both racial and sex segregation continue to exist in occupational programs, according to the criteria established by Court Order. Imbalances are more prevalent in certain districts and in certain program areas. Black students of both sexes are overrepresented in occupational programs, relative to their representation in the school system as a whole. Blacks are especially likely to be overenrolled in Home Economics and Technical programs, and underenrolled in Marketing and Distribution programs. Minorities of both sexes continue to be underrepresented on the occupational instructional staff.

However, it should be noted that, in some cases, the incidence of violation as reported here may be somewhat inflated. Several factors could contribute to this situation. First, as noted earlier, the formulas in some districts specify a range so narrow that compliance is extremely difficult at the program level. Second, in programs with low enrollments, a "violation" could represent a statistical fluctuation rather than a true racial or sex imbalance. Third, the district formulas were based on demographic information gathered during the 1970 census. These census data are not only old and possibly outdated, but also, according to some claims, are inaccurate in reflecting the Hispanic population. Finally, as noted in the introduction, there is reason to suspect that some of the enrollment numbers may be inaccurate.

It would also be unjust to emphasize racial/sex inequities without acknowledging the difficulties that efforts to accomplish racial/sex desegregation among both students and teachers encounter. Working towards the goals of sex and racial/ethnic desegregation of occupational programming, for example, means that some students will be denied access to programs in areas in which they are strongly motivated to learn; at the same time, assignment of students according to race and/or sex quotas may result in program underenrollment. There are situations in which a program has space for more students, but students who have applied for admission are wait-listed in an effort to fill race and sex quotas. On-site observa-

tion repeatedly documented the existence of such situations and the associated frustrations experienced by students and teachers.

This section on race and sex desegregation concludes with several additional relevant findings from the Boston Program Audit:

- When asked to what extent specific efforts related to reducing sex bias, sex stereotyping, and sex discrimination have been implemented, 30%-40% of guidance staff reported that the following aspects have not ben FULLY IMPLEMENTED: development of non-sexist counseling techniques; provision of counseling support for students enrolled in non-traditional programs; and modification of enrollment procedures and testing instruments to ensure equal access by males and females.

- On-site observation, confirmed by on-site interviews with administrators, department heads, and guidance staff, revealed that 25% of the written philosophies of occupational education available in the school did not specifically refer to equal access for women and minorities.

- One male teacher reported that sex equity was no problem in his occupational program. When asked to explain what he meant, he replied, "Because there aren't any girls."

C. Overall Planning and Coordination of Occupational Programming

The Unified Plan identified the isolation of occupational course offerings as an obstacle to achieving the goals of the delivery system. The need for integration both within and between schools was emphasized, and its absence noted. Future program planning and development efforts were to remediate sequencing and coordination problems.

The Boston Program Audit sought to determine the extent to which the occupational delivery system continues to provide fragmented course offerings. Although the results are not clearcut, there is evidence that in some programs, sequencing continues to be a problem between grades and across schools. While some school personnel acknowledged inadequacies in this area, a higher percentage (over 40%) of Audit Team members reported weakness in sequential programming. Findings that illustrate the variability in the data relating to program coordination are presented below:

- When asked if program objectives reflect sequencing from one grade level to another, 21% of teachers (N=284) stated "No."
- Fifty-four percent of teachers (N=154), 28% of administrators (N=50), and 27% of counselors (N=22) reported that curricula are NOT coordinated among schools.
- Twenty percent of guidance counselors (N=40) indicated that counselors from sending schools are NEVER informed about current occupational program opportunities.
- Whereas 41% of guidance staff (N=42) reported that recruitment and selection criteria, procedures and quotas are USUALLY coordinated with sending schools, 31% of guidance (N=42) indicated that they are NEVER coordinated.
- Fifty-seven percent of on-site observers (N=42) rated occupational program offerings as forming a sequential, integrated whole within the occupational area; the remainder documented the absence of program sequencing and integration.

School personnel reports of sequencing and coordination problems across grades and schools take on added meaning when the results are disaggregated (that is, broken down into smaller units of analyses such as funding source and district). What seems like a minority opinion in the aggregate turns out to be the product of a leveling effect. Areas where program coordination problems are more pronounced become camouflaged in a system-wide analysis. The following sections help to clarify areas of relative strength and weakness.

1. Analysis of Program Coordination Data by School Level

Teacher self-reports and on-site interviews with teachers consistently indicated that program sequencing is less apparent within occupational programs at the middle school level than at the high school level. There is an average difference of 20% between the esponses of middle school and high school teachers concerning the degree of program integration within and between schools. In all cases, high school teachers provided more favorable responses.

Although teacher responses suggest that the Unified Plan mandate to overcome program fragmentation may have received more attention at the high

school than at the middle school level, other respondent groups do not substantiate this conclusion consistently. For example, conflicting information was gathered from middle school guidance personnel by means of on-site interviews and self-evaluations. Whereas the majority of middle school guidance staff reported a lack of program integration in on-site interviews, self-evaluations did not support this finding. The responses of high school guidance staff were generally positive in both on-site interviews and self-evaluations.

School administrators at the high school level, however, provided contradictory information. On-site and self-evaluation data from high school administrators consistently document a greater degree of program fragmentation at the high school than at the middle school level. The difference between perceptions of administrators at each level is less pronounced, however, than the difference that has been noted to exist between teacher respondents from middle schools and high schools.

The discrepancies among responses of school personnel may be associated with a variety of factors, including differential awareness of the components of the delivery system and inconsistent standards as to what constitutes "coordination." The consistent differences between perceptions of teachers and administrators during both self- and on-site evaluation phases suggest that further investigation in the area of program coordination may be warranted in both middle schools and high schools if the goal of a well-articulated system at the program and inter-school level is to be achieved.

2. Analysis of Program Coordination Data by Funding Source

The data are more clearcut when source of program funding is considered. Both self-reports and on-site interviews reveal that the highest degree of negative response about program sequencing and integration exists among teachers of state-funded Chapter 74 programs. One-third of Chapter 74 teachers stated in self-reports that program objectives do not reflect sequencing from one grade level to the next. While this represents a minority opinion, it should be emphasized that state mandates under

Chapter 74 include guidelines for instructional content that specify sequential skill building. Integration of programs across grade levels would seem to be a prerequisite to intensive training programs that lead to employment after graduation, such as those offered under Chapter 74. It appears that some Chapter 74 programs exhibit weakness in this area.

3. Analysis of Data by Program Cluster

Analysis of self-evaluation results according to program cluster reveals that the following occupational areas are reported to exhibit a disproportionately high incidence of internal program fragmentation: Technical; Trade and Industry; Special Needs; and Home Economics. On-site interviews and team observations tended to verify self-evaluation findings in every cluster area except Home Economics.

4. Analysis of Data by District

Certain districts contributed more than others to reports of isolation among course offerings in occupational areas. Self-reports of and on-site interviews with teachers in Districts 2 and 7 revealed the highest concentration of responses that reflect program fragmentation (approximately 15% more negative responses than the average across districts). Reports from Districts 1 and 5 teachers documented more overall program coordination (approximately 8% fewer negative responses than the average across districts). Administrative personnel were most likely to report program fragmentation in Districts 2, 7, and 9. Among guidance personnel, those in District 9 were most likely to perceive program fragmentation.

When teachers, administrators and guidance personnel were asked to rate the importance of coordinating occupational programs between sending and receiving schools, a similar pattern of responses emerged at the district level. Most notably, the self-reports of teachers, administrators, and guidance personnel from District 2 reflect a high incidence of response that such coordination is not important (approximately 25% more negative responses than the average across districts). Other districts with a similar pattern of response include District 9 (teachers,

administrators, and guidance), District 4 (teachers only) and District 3 (administrators only).

5. Summary of Overall Findings Regarding Program Coordination

In many cases, results of the Boston Program Audit reveal a lack of consensus among school personnel regarding strengths and weaknesses of program coordination within and among schools. Among all respondent groups (e.g., teachers of state-funded programs, teachers in different cluster areas), the reports from school personnel at the middle school and high school level reveal the most glaring discrepancies.

Although the data are characterized by overall favorable reports, there seem to be pockets of perceived weakness. For example, teachers of some state-funded Chapter 74 programs report a lack of sequential programming across grades. It is therefore understandable that responses of program fragmentation are likely to be overrepresented in the Trade and Industry area. Negative responses are also disproportionately high in the Technical and Special Needs areas.

The possible (and quite probable) existence of inconsistent standards for program coordination suggests the need for measurement criteria that can be used to assess future progress in this area more objectively.

funded Chapter 74 programs (59%, N=29) provided the same negative equipment rating, a higher percentage of teachers than in programs funded by any other source. The coordination of occupational program objectives with objectives from other programs was also ranked in the top five areas requiring improvement. However, it would seem that a well-integrated and coordinated curriculum may be contingent upon a suitable setting, including appropriate equipment and facilities. In the context of these contingencies, the achievement of coordinated program objectives would be a realizable goal. Even the efforts of a well-trained and dedicated teaching staff may be undermined by the "state of the art" of curriculum and equipment as they currently exist.

Finally, on-site observers and school personnel were asked to compare facilities and equipment with similar programs in the school, Boston Public Schools, the district, the state, and the nation. Their responses offer an appropriate conclusion to the discussion of equipment. One-third of teachers' self-reports (N=249) rated operational equipment, tools, and facilities as 'SOMEWHAT/NOTABLY INFERIOR" relative to similar programs in the state. On-site Team members who rated the adequacy of equipment, tools, and facilities reported that more than 30% of the programs (N=76) were inferior compared with counterparts statewide. A consistently high proportion of weakness was documented at the middle school level and among state-funded Chapter 74 programs.

- Equipment and facilities that are inappropriate and not adapted for use by limited English-speaking, handicapped, and minority students ("Work table appeared high for any wheelchair-bound child. Did not see any lower work bench."); and
- Equipment that is not available in sufficient quantity ("There is one...engine which all children share.").

What seems to be an inescapable conclusion is that in addition to failing to provide opportunities for a high quality occupational education that will result in gainful employment, some classrooms pose outright health hazards.

6. Summary of Audit Findings Pertaining to Equipment

The Boston Program Audit documented equipment inadequacies in the following areas: delivery, installation, and maintenance of equipment; comparability of equipment with that being used in related employment settings; equipment safety; and suitability of equipment for use by special populations.

Supplementing the evidence of equipment problems reviewed in this section are the summary statements of school personnel. Each on-site interview and self-evaluation concluded by asking school personnel to rate the extent of improvement needed in various aspects of occupational programming in their schools, from the morale of teachers and students to the reduction of sex stereotyping. In the aggregate, these findings offer a revealing summary of the status of occupational equipment and facilities. Forty-six percent of teachers (N=291), 45% of administrators (N=69), and 61% of guidance (N=43) reported that equipment and facilities need moderate to extensive improvement. Of all areas in the school cited as needing improvement, equipment and facilities were ranked first. Only 5% of teachers (N=265), 8% of administrators (N=64), and 5% of guidance (N=42) cited equipment and facilities as the areas least in need of improvement.

Self-reports of 59% of middle school teachers (N=115) and 40% of high school teachers (N=165) rated the amount or type of available equipment as the principal area needing improvement. Over half of teachers of state-

4. Suitability of Facilities and Equipment for Special Populations

The appropriateness of classroom settings for the education of special populations also needs to be examined. Both the U.S. Office of Civil Rights Guidelines and federal vocational education legislation mandate the provision of education to special needs students in an environment with appropriate modifications and/or supports, devoid of architectural barriers. The findings of the Boston Program Audit, however, seriously question the systemwide enactment of these stipulations, at least in some areas. Twenty-nine percent of on-site observers (N = 24) and comparable proportions of administrators, teachers, and guidance staff stated that materials and equipment are fair to poor in their appropriateness/adaptability for use by limited English-speaking, handicapped, and minority students. Nearly one-third of the programs described as inadequate by on-site observers were funded by federal vocational education monies. Violations seem to be more prevalent at the middle school level, and in the Special Needs, Trade and Industry, and Home Economics cluster areas.

5. Anecdotal Observations Concerning the Status of Equipment

Supplementing the volume of quantifiable data regarding equipment problems is a wealth of editorial comment and anecdotal evidence that yields further insight into the classroom environment, the status of equipment, and the safety of students enrolled in occupational programs. Recurrent themes or major issues in the qualitative data provided by Team members and school personnel included the following:

- Outmoded equipment and obsolete machinery ("Replace 50 year old machines with new machinery.");
- Machinery that is in a continual state of disrepair ("Have been waiting for three years to fix refrigerator.");
- Brand new equipment that is unused/uninstalled ("Great surplus of equipment in this school, I'd estimate $20,000 to $50,000 which is not being used.");
- Physical facilities having poor ventilation, blocked exits, fire hazards ("Safety devices are nonexistent. Ventilation and blower system functioning at minimal level.");

- Thirty-eight percent of teachers (N=206) reported that safety features such as safety guards and cutoff switches are either lacking altogether, or of uncertain safety; and
- Eighteen percent of teachers (N=278) and 37% of administrators (N=64) stated that an average of one to three accidents* occur each month.

Further examination of these data reveals that dangers or hazards are concentrated in a few districts. For example, teachers' responses that students are not instructed in occupational safety and first aid are heavily concentrated in Districts 3, 5, and 8. A disproportionate number of accidents is reported by teachers and administrators in Districts 1 and 6.

Of the 38% of teachers (N=206) reporting that the absence of safety features creates conditions of questionable safety or outright danger, District 9 teachers (N=59) are slightly overrepresented. The highest degree of inadequacy is found in District 2, where almost two-thirds of teachers (N=16) reported the existence of questionable or unsafe conditions. A similar pattern of weakness in these two districts is revealed when responses to a question concerning the availability of personal safety items (such as glasses, insulated aprons, and gloves) are examined by district.

A final safety concern that will be discussed is allocation of space to insure safety and convenience of equipment storage. While the vast majority of school administrators rated the convenience, adequacy, and safety of storage facilities as "Good or Excellent," teachers provided less favorable reports. In self-reports, 35% of teachers (N=261) indicated that equipment storage facilities were inadequate. Relative to the systemwide average, a slightly higher percentage of teachers of state-funded Chapter 74 programs and programs funded under federal vocational education legislation reported storage inadequacies. In this regard, it should be noted that regulations pertaining to equipment storage are among the approval factors for Chapter 74 state funding.

*With regard to the above-mentioned fincings, factors that may affect perceptions of safety need to be considered. These include the following: what constitutes an "accident," awareness of safety features and violations; and the existence/absence of a uniform recordkeeping system to document safety procedures and their failures.

With regard to equipment availability, teachers typically reported inadequate quantities of equipment that is available for student use. Over 60% of teachers systemwide (N=280) reported insufficient quantities of equipment. Teacher representatives from state-funded Chapter 74 programs (N=29) were as likely as teachers from other programs to complain about insufficient equipment. This represents a direct violation of Chapter 74 regulations pertaining to equipment.* Fewer than half of the teachers at the middle school level (42%, N=115) reported sufficient quantities of equipment. High school teacher responses (N=154) suggest a less serious problem at that level, with 73% reporting an adequate amount of equipment.

2. Comparison Between Occupational Equipment and Related Occupational Environments

As indicated in the discussion of curriculum findings, it may be difficult for the educational system to keep pace with modern technology. In light of the potential of occupational education to lag behind related occupational settings, the Boston Program Audit inquired if the general classroom environment is consistent with that of related business and industry settings. Just under half the teachers interviewed on-site (N=94) responded negatively. The reports of middle school teachers are considerably overrepresented among these negative replies, as are the reports of teachers of state-funded Chapter 74 programs. Responses are distributed relatively evenly across districts.

3. Equipment Safety

There was a high degree of agreement among on-site observers and school personnel that the spacing of equipment and machinery is not conducive to safety in many occupational programs. Safety concerns are further documented below:

- Twenty-seven percent of teachers' self-reports (N=190) stated that students are not instructed in occupational safety and first-aid;

*Chapter 74 regulation 603 CMR 4.08 requires that equipment be available in sufficient quantity to allow all students to work continuously.

in programs receiving other monies. The rank ordering below presents each cluster area, from best to worst, and the associated percentage of teachers who stated that all ordered equipment is not currently operational.

	Number of Respondents	Percentage of Respondents Reporting that Ordered Equipment is Not Operational
Business	71	58%
Trade & Industry	89	65%
Special Needs	15	73%
Home Economics	35	74%
Distribution & Marketing	6	83%
Technical	27	89%
Guidance & Career	17	96%
Health	5	100%

Once again, a large amount of variability is evident across clusters, although the relatively high overall proportion of negative responses is noteworthy. Timely delivery and installation of equipment that has been ordered (and presumably approved) seems to be a profound problem that cannot help but impact upon the service delivery capacity of occupational programs, particularly those in which reported weakness is most pronounced.

With regard to the maintenance of equipment once it has been delivered and installed, self-reports of 31% of teachers (N=259) indicated that equipment is not maintained at operating effectiveness. A slightly higher proportion of both on-site observers and teachers reported that equipment was in fair/poor working condition. When the on-site responses are analyzed by different program characteristics (middle school/high school, funding source, cluster area), both on-site observers and school personnel agree that particular inadequacies exist in middle school programs, state-funced Chapter 74 programs, and Trade and Industry programs. One-half or more of teachers and observers in these areas reported that equipment was in fair/poor operating condition.

E. Equipment

It is appropriate that a discussion of the "state of the art" of equipment immediately follow the presentation of findings on the "state of the art" of curriculum, for the two are closely interrelated. To achieve the objectives set forth in a revised and sequential curriculum that is responsive to current technology, vocational facilities and equipment must meet certain standards, some of which are outlined in the legislation. General legislative standards include the suitability of equipment for use by special needs populations, the accessibility of facilities, and the availability of equipment compatible with modern standards. More specific regulations apply to state-funded Chapter 74 programs. These regulations cover areas such as equipment storage, spacing, and safety.

The Boston Program Audit gathered a large amount of information concerning the status of equipment in Boston's occupational programs. The systemwide variability that was noted to exist among occupational curricula is equally apparent in the area of equipment. Therefore, subanalyses will be presented for several equipment-related issues, and a summarizing statement will conclude this section.

1. Delivery, Installation, and Maintenance of Equipment

The Boston Program Audit was not exclusively concerned with gathering information about equipment that was currently operational. The issue of unuseable equipment (due to unfilled orders, equipment malfunctions, and lack of familiarity with operating procedures) was a major audit concern. Therefore, specific information was requested about the status of equipment delivery, installation, and use.

When on-site Team members inquired if ordered equipment had been delivered, 37% of school personnel (N=141) responded "No." However, in self-reports 63% of the teachers (N=285) indicated that ordered equipment had either not been delivered or not been installed. Seventy-five percent of teachers responding on behalf of state-funded Chapter 74 programs (N=30) gave this reponse, a considerably greater proportion than that of teachers

The Boston Program Audit revealed varying opinions regarding the existence and adequacy of written curricula. Perhaps the most appropriate conclusion is that there is neither a single "state" nor a continuity of "art" in the area of curriculum. Rather, there seem to be systemwide discrepancies in all aspects of curriculum - its availability, recency, relevancy, and inclusion of program objectives.

Although at the time of the Boston Program Audit, teachers systemwide were involved in curriculum development efforts for programs at the new Occupational Resource Center (which opened in September, 1980), the same degree of concerted effort could not be documented elsewhere in the system where the majority of students are currently enrolled and will continue to be enrolled in occupational programs. On-site observers' comments (e.g., "Little or no formal curriculum work"), supported by objective data, reveal a need for curriculum development systemwide, involving students, parents, and industry. While administrators throughout the system espoused the merits of curricula, on-site evaluators noted the need for leadership to implement the sequential ordering of courses and coordination between program levels, once updated curricula are written and distributed systemwide. Of course, it is more reasonable to expect business and industry to participate in reviewing course content and objectives if there exist written curricula to which they can respond.

While there is evidence of timely program offerings reflecting considerable curriculum development effort, it seems that if curriculum development and revision were among the criteria applied in the funding process, some of the occupational program offerings that currently exist would have either been updated accordingly, or phased out entirely. With the opening of the Hubert Humphrey Occupational Resource Center, the contrast between past and present may become even more dramatic.

D. Curriculum

The Unified Plan refers to curriculum design as an "integral component" in the process of responding to the needs of students who are served by the occupational delivery system. Specified in the Plan are several curriculum sources (both projects and products) that were to be available for use until full-scale curriculum development efforts could be undertaken.

This section of the report examines the current status of curriculum in the Boston's occupational programs, including such features as its availability and timeliness. Because there tends to be a great deal of variability among the findings relating to curriculum systemwide, subanalyses (such as funding and district) are highlighted for each of the curriculum features discussed, and this section is organized topically. Following discussion of each of the curriculum features, an overall summary of the "state of the art" of curriculum is provided.

1. Availability of Written Curricula

During on-site visitations, Team members requested to review program curriculum guides. In almost half the classrooms where these requests were made (N=232), written curricula were either incomplete or unavailable for examination. Across districts, reports of incomplete/missing curricula were distributed unevenly, with the heaviest concentration of such reports in Districts 2, 3, 5, 7, and 9.

Analysis of data by program cluster reveals that two areas exhibit particular weakness with regard to curriculum completeness and availability. These areas are Guidance and Career (N=17), in which over 75% of curriculum requests could not be fulfilled satisfactorily, and Special Needs, in which curriculum requests could be fulfilled in only 4 of the 10 classrooms visited. Other clusters that exhibit more than average weakness (5%-10% above the systemwide average) with regard to curriculum completeness and availability are Business, Trade and Industry, and Marketing and Distribution.

In contrast with on-site observation, the majority of school personnel self-reports indicated that complete, written curriculum guides were available. The inconsistency between on-site observation and self-evaluation is apparent both in the aggregate, and within relevant subsets of data (e.g., district and funding).

2. Curriculum Currency

Like curriculum availability, recency of curriculum revision was inconsistent across districts, as indicated below. For example, while 92% of the curricula inspected in District 6 (N=12) had been revised during the past five years, in District 4 only 31% of available curricula (N=13) had been revised in that time period.

	Number of Curricula Examined	Number of Unavailable Curricula	Percentage Revised Since 1975
District 1	13	6	39%
District 2	11	7	63%
District 3	14	9	57%
District 4	13	4	31%
District 5	12	14	59%
District 6	12	9	92%
District 7	15	16	59%
District 8	13	7	77%
District 9	32	17	65%

Systemwide, more than one-quarter of the curricula examined by Team members (N=135) had been revised prior to 1975. These curricula were located in the areas of Business, Home Economics, and Trade and Industry. Curricula that had been in use for ten years before the outbreak of World War II were also documented.

Self-reports of teachers, administrators, and guidance staff add another dimension to the issue of curriculum revision. From the reports of school personnel, it seems that once the objectives of a program are written, they are not consistently revised to reflect activities/changes such as the following: employer follow-up, needs assessment, student feedback, graduate follow-up, changes in regulations, and technological

advances. For example, almost 50% of high school personnel, including a comparable percentage of teachers of state-funded Chapter 74 programs, reported that program objectives are not reviewed with regard to annual employer follow-up and employment needs assessment results. It is unclear, however, whether school personnel were responding negatively to this question because such documentation (i.e., employer follow-up, employment needs assessment) is not available for use in revising objectives. Whether the information is unavailable or available but not used, it seems apparent that curriculum development efforts could benefit from increased collaboration with the marketplace.

Further evidence that curriculum revision may not be responsive to the "state of the art" of technology is provided in response to the following question: To what extent do program content and instruction reflect current technological developments and occupational trends? Table 2.12 indicates a high degree of agreement between school personnel and on-site observers, the majority of whom reported that instructional content does not reflect current technology.

Table 2.12
Perceptions of School Personnel Concerning
the Relationship Between Curriculum and Technology

Rating Category	On-site Observers (N=25)	School Personnel (N=113)
	%	%
Totally up-to-date	44	46
Somewhat/totally outdated	56	54

Responses of school personnel to this question were rather evenly distributed across middle schools and high schools. A breakdown by cluster area further reveals that only in the areas of Trade and Industry, Business, and Special Needs did a majority of respondents provide an "up-to-date" rating. This finding is particularly interesting, given the findings

of outdated available curricula and general lack of curriculum availability documented earlier in these clusters.

In state-funded Chapter 74 programs, one criterion for reimbursement is that courses of study be based on the relevance of expected student competencies to actual job requirements. Nonetheless, less than 50% of on-site observers and school personnel rated Chapter 74 programs as up-to-date with regard to current technical developments and employment patterns. While a relatively high percentage of respondents, in general, indicated that program content and instruction are totally up-to-date, it is unclear whether or not the standards that were applied are either consistent across respondent groups, or with technological advances, themselves.

3. The "State of the Art of Curriculum" Summarized

Two important facts emerge among findings relating to curriculum development. First, complete written curricula were not available for review by on-site Team members in almost half the occupational programs visited (i.e., 110 programs out of 232 programs had unavailable or incomplete curricula). The majority of unavailable curricula had been revised during the past five years (i.e., 97 of the 135 curricula examined). There is reason to suspect, however, that curriculum revision efforts may not be consistently attuned to technological advances or to changes in employment opportunities. Of course, it may be unrealistic to expect a high degree of compatibility between instructional content and marketplace demands given the rapid technological advances in our society. Keeping pace with an ever-changing technology would require not only responsive curricula, but equipment necessary to implement them. Fiscal constraints may impede educational progress that parallels technological progress.

The reality that the educational system may be forced to move more slowly than the larger society in terms of technological innovation cannot, however, excuse the continued existence of programs that were obsolete years ago. A close look at the relevance of current programs offerings seems long overdue.

F. Linkages to External Resources

In characterizing occupational education in Boston as a "closed system," the Unified Plan stressed the need for increased interaction between that system and external resources. Strengthening ties with parents, business and industry, and advisory groups was expected to yield reciprocal benefits. The anticipated short-term advantages to the occupational delivery system include a bolstered self-image derived from the infusion of support and technical assistance. Long-term advantages to the resource network, particularly business and industry interests, take the form of increased numbers of well-trained potential employees.

The Boston Program Audit sought information that would shed some light on the relationship between occupational education and the larger community. These Audit findings are presented in the sections below according to the following organizational scheme: first, data are provided in the aggregate for each of the three external resources (parents, business and advisory groups); then, breakdowns (by middle school/High school, funding source, and so on) that serve to elucidate the system-wide data are presented.

In reviewing these results it is important to recognize that they represent a perspective that is exclusively school-based. A balanced understanding of the interaction between the system and its external resources would require information from the community sector.

1. Aggregated Data Illustrating the Interaction Between the Delivery System and Its External Resources

a. Parents

The Unified Plan recommended initiating an intensive, multi-media public information campaign with the goal of generating or reinforcing parents' positive attitudes toward occupational education. The Boston

Program Audit asked a series of questions about the school's promotional activities, with the following results:

Table 2.13
Public Relations Activities Instituted by Schools
As Reported by School Personnel (N=111)

Type of Activity	School Personnel	
	Yes	No
	%	%
Planned program for informing the community about occupational programming	58	42
Review of program publicity to eliminate sex stereotyping	87	13
Inviting parents of occupational enrollees to participate in school activities	82	18
Active seeking of community involvement	73	27

Self-reports of school personnel presented in Table 2.13 suggest that while some public relations activities are underway, a "planned program" is not necessarily operative system-wide. In fact, over 40% of school personnel indicated that such a program does not exist.*

The data in Table 2.13 fail to fully convey the extent to which parents may lack encouragement to play a major role in occupational program functioning. The following findings tend to fill in some of that missing detail:

- Teachers, administrators, and guidance staff reported that of the efforts that have been made to upgrade the status of occupational programming among various groups, the least amount of effort has been directed toward parent and community populations.

*It should be noted that subsequent to the conduct of the Boston Program Audit, a commercially produced publicity campaign was enacted to inform the public about the Hubert Humphrey Occupational Resource Center (HHORC) prior to its opening in September.

- Administrative and guidance personnel ranked parents of current students as making the smallest contribution to occupational program development and evaluation among various potential contributors.

- Sixty-four percent of teachers (N=289) stated that they never participate in parent orientation activities.

With these findings in mind, it is not surprising that students surveyed during the Boston Program Audit did not cite their parents as a source of information about occupational programming.* In review, it seems that concerted effort to disseminate information about occupational programming to parent/community resources has not been undertaken system-wide. The perceived absence of parent/community input is therefore consistent with the overall image of a "closed system."

b. Business and Industry

One of the specific recommendations of the Unified Plan concerned developing and/or expanding collaborative relationships with business and industry. In response to this mandate, several such collaborative pairings have been formalized for the purpose of training students on the job. Although the Boston Program Audit collected only impressionistic information about these programs because of their off-campus locations, anecdotal comments suggest general agreement that partnership educational experiences can offer many advantages. These advantages include exposure to "real world" job settings, first-hand experience with work expectations, and task-specific training and experience.**

Aside from the potential of collaborative programs to provide an alternative to classroom skills training, there are diverse ways in which business and industry can impact upon in-school occupational programming. One way to create a closer relationship with business and industry and to

*A complete discussion of the results of the student survey appears in Section D of this chapter.

**The potential of the collaborative pairing concept as a model that can provide employability skills training unparalleled in simulated work settings seems to demand further consideration and longitudinal evaluation in order to determine the appropriateness and feasibility of its expansion.

tap into the technical expertise of these external resources is to encourage the participation of various representatives in classroom activities. The Boston Program Audit asked occupational teachers how frequently such visitations occurred; 50% of teachers (N=258) replied "RARELY OR NEVER." When administrators were asked to rate the adequacy of use of community resources and/or representatives of business and industry in occupational demonstrations and instructional activities, 48% (N=60) responded "NEEDS IMPROVEMENT."

A second way to enhance the reciprocity between occupational education and business and industry is to use the latter's feedback based on experience with program graduates as a mechanism for modifying course content and instructional techniques. The Boston Program Audit asked school administrators and guidance staff whether or not information from follow-up studies is used to revise and improve occupational programs, with the following results:

- Forty-seven percent of administrators (N=51) and 41% (N=29) of guidance staff reported that program objectives are not reviewed with regard to employer follow-up and employment needs assessment results.
- Thirty-three percent of administrators (N=54) and 36% of guidance staff (N=33) stated that program objectives are not modified to reflect student feedback and graduate follow-up.

These results suggest that input from employers (business and industry) and employees (student graduates of occupational programs) is not consistently translated into the kind of programmatic changes that might create a better fit between the demands of the workplace and training and preparation to meet those demands.

Perhaps the relationship between business and industry and occupational education can best be assessed by examining the employment prospects that are available to program graduates. Toward this end the Boston Program Audit asked administrative and guidance personnel to indicate whether or not business and industry voluntarily seek employees from their school's occupational programs. In response to this question, 39% of administrators (N=61) and 41% of guidance staff (N=39) stated "No."

In summary, results of the Boston Program Audit suggest the need for increased coordination with business and industry. Such coordination might help to achieve the logical union between job training and the job market.

c. Advocacy and Advisory Groups

The Unified Plan specified guidelines for the formation and functioning of various community-based advisory groups (such as the Advisory Council for Career/Vocational/Occupational Education and the Cluster Advisory Committees) and delineated the role of advocacy groups (such as the Citywide Parents' Advisory Council) in program monitoring and evaluation. The Unified Plan further outlined a requisite training format that the Boston Public Schools were to implement in order to inform members of these advisory groups about Federal Court-ordered mandates and other relevant legislation pertaining to occupational programming.

Although investigating activities particular to the various advisory and advocacy groups was outside the school-based focus of the Boston Program Audit, some information about the impact of these groups in general was gathered, as described below.

One-third of the teachers indicated in on-site interviews that the contributions of the advisory groups have been positive, one third that they have been not at all positive, and one-third were non-committal. Whereas 53% of administrators (N=17) and 58% of teachers (N=33) reported to on-site observers that program functioning is not affected by the recommendations of a craft/technical committee, approximately one third of administrators and teachers said that successful implementation of a craft/technical committee's recommendations can be documented.

In addition to reflecting similar variability in perception within and among respondent groups, self-evaluation results tend to indicate a general lack of knowledge about the existence and functioning of these groups. For example, when asked if the advisory committee contains representatives of occupational content areas, 61% of teachers (N=240) and 53% of guidance staff (N=36) responded "DON'T KNOW." Among teachers, administrative, and

guidance personnel, administrators reported the highest degree and quality of interaction with advisory groups, as illustrated in Table 2.14:

Table 2.14
Adequacy of Communication between
Advisory Groups and School Personnel

Item	Self-Evaluation Respondent Group		
	Teachers (N=156)	Administrators (N=47)	Guidance (N=26)
	%	%	%
Opportunity to Communicate with Advisory Committee is usually adequate	33	63	43
Advisory committee is usually sensitive to its relationship with members of respondent group	31	57	35

Two other aspects of advisory group functioning relate to the mandates of the Unified Plan. First, as mentioned earlier, the Plan emphasizes the importance of providing advisory groups with a thorough understanding of the legislative mandates to which the occupational delivery system must be responsive. Relative to this stipulation, the Boston Program Audit inquired about advisory groups' knowledge of the law. Thirty-two percent of administrators (N=47) reported that advisory committee members have no working knowledge of current federal and state legislation pertaining to vocational education. With this information in mind, the indication that recommendations of advisory groups are not always implemented may, in some cases, be attributed to members' lack of familiarity with legislative constraints.

A final point regarding the interface between advisory group functioning and Unified Plan mandate concerns the extent to which advisory group composition is representative of the larger community and, in turn,

represents the interests of occupational education in that community. The following findings* of the Boston Program Audit help to elucidate that reciprocal representation:

- When asked about the composition of occupational advisory groups, administrators and guidance personnel described the representation as follows:

Table 2.15
Advisory Group Representation as Reported by Administrators and Guidance Personnel**

Groups Represented on Advisory Committee	Administrators (N=48)	Guidance (N=32)
Both sexes	71%	45%
Racial and ethnic minorities	78%	56%
Handicapped and disadvantaged	45%	30%
Each occupational area	71%	31%
Management	72%	32%
Labor	62%	29%

**Positive responses are reported.

- Two-thirds of administrators and guidance personnel indicated that advisory committees are either somewhat or not at all active in publicizing and promoting occupational education in the community.

Review of these findings suggests that there is either uncertainty about advisory group composition (given the discrepancies between the self-reports of administrators and guidance staff), lack of adequate knowledge of advisory group representation among members of one respondent group, or lack of consistency in advisory group composition across districts (given the aggregated nature of the data). Possibly, the results presented in Table 2.15 are a function of the interaction of all three

*Administrative and guidance personnel responses are presented due to the relative lack of adequate communication with advisory group members expressed by teachers.

factors.* Irrespective of the explanation, however, it would seem that the composition and functioning of advisory groups bear further investigation. This observation derives not only from the incongruities of the data gathered by the Boston Program Audit, but also from the possibility suggested by the data that reciprocal representation (that is, advisory groups representing community interests in school interactions and occupational education interests in community interactions) may not have achieved its potential.

2. Analysis of Data Pertaining to External Resources by Middle School/High School

The trends among the data relating to linkages with external resources, when examined from a middle school/high school perspective, are rather clearcut. Three major tendencies emerge.

First, responses that relate to parents' involvement in and knowledge of occupational program activities and functioning are reasonably similar at the middle school and high school level. Only a slightly higher percentage of high school personnel than middle school personnel indicated that parents are recognized and sought after as resources for occupational programming. Likewise, little difference seems to exist between the efforts to upgrade the status of occupational education among parents as reported by middle school and high school personnel.

The most apparent discrepancies among responses to questions concerning parents occur among guidance staff at the middle school and high school levels. These responses seem to indicate that middle school guidance personnel may be less involved in promoting occupational programming among the parent population than guidance personnel at the high school level. Given the Boston Program Audit's finding** that the Federal Court-ordered middle school Career Guidance component has been more or less phased out since its initiation, this trend is not surprising.

*The third factor, district or school inconsistency, is explored in the breakdowns that follow.

**For discussion of Career Guidance, refer to Section I of this chapter, as well as the Unified Plan summary outline.

The second major difference between middle schools and high schools is the rather striking disparity between responses pertaining to the involvement of business and industry in occupational programming at each level. Because of the emphasis on career exploration at the middle school level, it is perhaps to be expected that reciprocity between occupational education and business and industry would be less of a priority than it is in high schools. Whether or not establishing such a relationship would be of mutual benefit might be worth exploring.

The final trend among the middle school/high school breakdowns concerns the composition and functioning of advisory committees. With the exception of middle school administrators, respondent groups at both levels reported that advisory committee involvement is more heavily concentrated at the high school than at the middle school level. Middle school administrators were more likely than their high school counterparts to provide affirmative responses to questions concerning the adequacy of representation of both sexes, minorities, and handicapped/disadvantaged on advisory committees. In addition, middle school administrators reported better communication with advisory committees, a higher degree of advisory committee sensitivity, and slightly more action in response to advisory committees' recommendations than high school administrators. Discrepant responses among middle school personnel leave the issue of advisory group composition and functioning at that level unresolved. There are indications, however, that a positive relationship exists between-some middle school administrators and their advisory committees.

3. Analysis of Data Pertaining to External Resources By Source of Program Funding

When analyzed by funding source, results of the Boston Program Audit exhibit the following overall trends:

- Responses from teachers of Chapter 70 programs (state aid to education) tend to reflect the lowest overall involvement with parent and community activities, including orienting parents to occupational programs and making efforts to upgrade the status of occupational programs.

- Teachers of Chapter 74 programs (state reimbursement for vocational/occupational programs) and programs funded under P.L. 94-482 (federal Vocational Education funding) reported a higher degree of mutual interaction with business and industry than did teachers of Chapter 70 (state aid) or Chapter 636 (Equal Educational Opportunity funding) programs.

The latter trend might have been anticipated for the following reasons: 1) State-funded Chapter 74 programs emphasize skill training and often feature related on-the-job experience; 2) State-funded Chapter 70 programs and Chapter 636 programs are often exploratory in nature; and 3) Federal Vocational Education funding priorities include cooperative work experiences as well as efforts to strengthen ties with business and industry through vocational guidance.

Finally, the data relating to advisory committee input were analyzed by funding source. Not only does the Unified Plan emphasize the important role of advisory groups as external resources, but programs funded under Chapter 74 and P.L. 94-482 have specific regulations with regard to advisory committee functioning. The following trends characterize the data obtained from teachers' self-reports:

- Federally-funded 94-482 programs consistently reflect the existence and active participation of advisory committees.
- Programs receiving state funds under Chapter 74 reveal relative weakness in the following mandated areas: preparation and distribution of minutes of advisory committee meetings; regular advisory committee meetings; interrelationships between school personnel and advisory committee members; definition of advisory committee roles and responsibilities; and operational recommendations.
- Members of Chapter 74 program advisory committees have more relevant direct work experience in specific Chapter 74 content and skill areas than do members of advisory committees interacting with occupational programs funded by any other source.

4. Analysis of Data Pertaining to External Resources By Program Cluster

Linkages with external resources varied considerably among the occupational program clusters. For example, whereas only 30% of Guidance

and Career respondents (N=17) reported USUALLY or SOMETIMES participating in parent orientation activities, four of the five respondents from Distribution and Marketing indicated that they were USUALLY or SOMETIMES involved in these activities.

Variations across clusters are also evident when responses to the following question are analyzed: Is feedback from employers used to modify program content and instructional technique? While 72% of Trade and Industry respondents (N=25) replied "OFTEN" or "SOMETIMES," three of the four Technical respondents indicated that such feedback is NEVER used for program modification.

Examining data across clusters reveals that whereas four of the five Health respondents and a similar proportion of Guidance and Career respondents (N=15) reported making efforts to upgrade the status of occupational programs in the community, 63% of Trade and Industry representatives (N=81) and 70% of Technical representatives (N=23) indicated the absence of such efforts.

Finally, responses concerning whether or not the advisory committee is composed of persons directly engaged in relevant occupational areas indicate that over 50% of the representatives from the following clusters replied "NO": Technical; Guidance and Career; Business and Office; and Trade and Industry.

Despite the high degree of variability among responses to individual questions concerning linkages with external resources, it seems that the Technical area, more than any other cluster, tends to function in relative isolation from the world beyond the school. One possible explanation may be that technical programs are oriented more towards preparing students for advanced training, rather than employment, after graduation.

5. Analysis of Data Pertaining to External Resources by District

Across districts, a few major trends in the data pertaining to

external resources are noteworthy. These trends will be described as they relate to each of the resources under discussion.

a. Interactions with Parents

In general, teachers from District 8 reported the highest degree of involvement in orienting parents to occupational programming. Teachers from Districts 1, 2, 3 and 5 are overrepresented among respondents indicating that they NEVER are involved in parent orientation. In District 2 there seems to be little evidence that a public information campaign to inform community members about occupational programming has been undertaken. Self-reports from school personnel in District 2 also reveal a comparatively low degree of parent and community involvement in occupational education. On the other hand, responses from Districts 1, 3, and 8 indicate that relatively more emphasis is placed upon integrating school and community.

b. Interactions with Business and Industry

There is consistent indication from the responses of District 2 administrators that the occupational education/business and industry interface has been less developed in their schools than in schools in other districts. Responses from administrators in District 5, for example, reveal an adequate degree of involvement of business and industry resources in classroom activities. Compared to the 88% of District 5 administrators (N=9) reporting a close relationship between classroom activities and business and industry contributions, 100% of District 2 administrators (N=5) reported that the influence of representatives of business and industry on classroom functioning "NEEDS IMPROVEMENT."

c. Interactions with Advocacy and Advisory Groups

Teachers from District 2 were more likely than other teachers to indicate that they NEVER have an adequate opportunity to communicate with members of their advisory committees, and that these committees are NEVER sensitive to their relationships with occupational teachers. Administra-

tors from Districts 4 and 6, however, were more likely to provide negative responses to questions about their relationships with advisory committee members.

· Administrators from Districts 1, 8, and 9 exhibited a high degree of positive regard for the extent to which advisory committee members are acquainted with relevant legislation pertaining to occupational programming. Administrators in Districts 2, 3, 4, and 7 were most likely to report that advisory committee members' knowledge of the law is insufficient. Finally, according to administrators in Districts 2, 6, and 9, their advisory committees are more actively involved in promoting the interests of occupational education in the community than are committees in other districts.

Across districts, the high degree of variability in advisory committee functioning that had been suggested by the discrepancies in the aggregated data become apparent. Not only do there seem to be inconsistencies across districts, but within districts, as well. For example, responses from District 2 school personnel reveal especially active advisory committees. The impact of advisory group functioning, however, was generally perceived as negative.

8. Summary of Overall Trends in the Data Pertaining to Linkages with External Resources

When the distribution of responses to questions concerning linkages with externa. resources is examined according to the categories of school level, funding source, program cluster, and district, the following general trends emerge:

1. Parents tend to be equally uninvolved in the overall functioning of state-funced Chapter 70 programs (which constitute the bulk of occupational programs in the delivery system) at both the middle school and the high school levels. Less effort seems to have been devoted to upgracing the status of occupational programming among parents and the community in the Trade and Industry and Technical areas than in Marketing and Distribution and Guidance and Career. District 2 schools tend to reflect the least amount of integration between parents/community and schools.

2. There is a higher degree of interaction between occupational education and business and industry in state-funded Chapter 74 and federally-funded P.L. 94-482 Trade and Industry programs at the high school level than is evident in any other program area at any level. Technical programs evidence a dramatically low level of such interaction. Whereas District 2 programs reflect the least well-developed relationship with business and industry, District 5's relationships seem most positive.

3. Advisory committee composition and functioning seem to be rather idiosyncratic within the delivery system overall. Although there seems to be poor communication generally about the advisory committee's role vis-a-vis occupational programming, there is evidence that among federally-funded 94-482 programs a relative degree of articulation between school personnel and advisory committee members exists. State reimbursement mandates for Chapter 74 programs appear to be inconsistently fulfilled with regard to advisory committees. Across and within districts there is wide variation in the extent to which advisory committees are perceived as informed, qualified, and helpful.

In summary, the data suggest that the image of the "closed system" might continue to characterize occupational education. What seems to be lacking overall is a union between the classroom and the world outside.

G. Internal Management and Administration of Occupational Programs

In commenting upon the "dysfunctional" mangement structure for occupational education in the Boston Public School System, the Unified Plan made the following statement: "A first priority need is, therefore, for a management structure which, by nature and intent, can account for an articulated, quality vocational/occupational delivery capability, system-wide" (p. 48). While the Unified Plan concentrated on the management reorganization of non-school based personnel (e.g., Central ofice and District level administrative and supervisory staff), Boston Program Audit data collection activities were not conducted at that level. In focusing on occupational programming at the school and program level, however, the Boston Pogram Audit Team gathered information on the overall management and administration of occupational education as it is reflected in the schools.

This section presents results of the Boston Program Audit that pertain to two aspects of the occupational delivery system's internal management and administration capacity. First, findings that help to illustrate how policies affecting occupational programs are formulated and implemented are considered, and supporting examples of policy implementation in the areas of program modification and recordkeeping are provided. Second, the system's internal capacity for monitoring compliance is discussed in relation to several specific compliance issues. This discusston concludes with an outline that summarizes the status of compliance with the mandates of the Unified Plan.

1. Analysis of Data Pertaining to Policy Formation and Implementation

As indicated in Table 2.16, a comparison between teachers' and administrators' perceptions about the extent to which teachers are informed about policy decisions and related implementation procedures reveals several areas of disagreement.

Table 2.16
Perceptions of Teachers and Administrators
Regarding Teachers' Full Knowledge of Policies
and Procedures

Types of Policies and Procedures	Teachers %* (N=291)	Administrators %* (N=65)
Job descriptions	43%	71%
Staff qualifications	47%	78%
Student recruitment, selection and admissions procedures	32%	65%
Student and employer follow-up procedures	24%	47%
Program evaluation	31%	62%
Staff improvement	38%	63%
Coordination with sending/receiving schools	19%	37%

*Percentages of teachers and administrators reporting that teachers are FULLY INFORMED.

While key areas of disagreement seem to center on policies related to staff qualifications, student recruitment, and program evaluation, overall responses of teachers and administrators reflect an average difference of 27 percentage points. Administrators in all cases perceived staff to be more fully informed than staff indicated they were. Examination of the selected policy areas about which information was obtained reveals general agreement among teachers and administrators that teachers have relatively more information about contractual matters (such as job descriptions and requisite qualifications) than about aspects of occupational program functioning (such as follow-up and inter-school coordination).

Responses of middle school teachers and administrators reveal a higher degree of discrepancy in perceptions than do responses of high school

teachers and administrators, with an average difference of 37 percentage points between the responses of middle school personnel, and an average difference of 19 percentage points at the high school level. While the indication that occupational teachers and school administrators differ in their perceptions may not be illluminating by itself, it seems noteworthy that teachers at the high school level, particularly teacher respondents of state- and federally-funded programs, acknowledge a consistently higher degree of information about policies and procedures pertaining to occupational education than do middle school occupational teachers, as a group.

The middle school/high school and teacher/administrator differences that have been noted remain pronounced across a range of additional questions concerning teachers' input into policy formulation, as indicated in the findings summarized below:

- When asked whether or not the school's organizational structure allows staff input into policies governing the functioning of occupational programs, 38% of middle school occupational teachers (N=120) and 78% of middle school adminisrators (N=23) reported "FULLY." High school teachers and administrators were in closer agreement, with 41% of teachers (N=177) and 55% of administrators (N=42) responding "FULLY."

- In response to a question regarding whether or not staff input into program development and implementation is sought and respected, 35% of middle school teachers (N=121) and 68% of middle school administrators (N=25) replied "FULLY." In comparison, 51% of high school teachers (N=176) and 54% of high school administrators (N=43) gave this response.

- When asked whether or not staff recommendations are acted upon/implemented, 15% of middle school teachers (N=117) and 60% of middle school administrators (N=25), compared with 22% of high school teachers (N=176) and 38% of high school administrators (N=42) stated "FULLY."

In contrast to findings presented earlier, teachers of state-funded Chapter 74 programs contributed the lowest proportion of positive responses to each of the above-cited questions. It should be noted, however, that the responses of all groups tend to indicate the existence of a gap between the level at which policy is formulated and the level at which it is

implemented. Furthermore, teacher responses not only suggest that policies and procedures affecting program functioning may be unclear, but that teacher recommendations may go unheeded. One teacher articulated the consequences as follows: "Administration seems to play games and shield results from teachers. This promotes bad morale. We need more regard for instructors' ideas about programming." The following statement of a school administrator expresses his school's sensitivity to that need: "There are efforts being made to improve the quality of communcation and cooperation of the whole staff."

The issue of communication is one that was also investigated during the on-site and self-evaluation phases of the Boston Program Audit. During on-site visitations organizational charts (illustrating whatever lines of authority and communication had been formally established within and among the school's administration, departments, and instructional staff) were produced in response to only 61% of observers' requests (N=64); the accuracy of those charts which observers were able to examine could not be assessed, however, during the time allotted for the observation/evaluation process. Despite the inconsistent availability of organizational charts, the majority of teachers (76%; N=83) and administrators (84%; N=64) interviewed reported that the lines of authority are clear to all personnel.

The results of administrative and guidance self-evaluations provide some insight into the effectiveness (distinguished from clarity) of whatever organizational structure exists within the school and its occupational program area(s): 33% of administrators (N=69) and 51% of guidance staff (N=47) stated that the lines of authority and communication are not fully defined and utilized.* Among the responses of guidance personnel, the highest proportion of negative responses was offered by those in middle schools. A possible explanation of the different response tendencies of high school and middle school guidance personnel may derive from the phasing out of the Unified Plan mandated Career Guidance function, as noted earlier.

*The trend for on-site interviews to solicit more positive responses than those provided by the same respondents to self-evaluation questions is relatively consistent. A tendency to provide "socially acceptable" answers to in-person interviews is not an uncommon research phenomenon.

The results of another set of interrelated questions from administrative and teacher self-evaluations provide additional insight into the delineation of responsibility within the school's internal organizational structure. In response to a question about the extent of their overall responsibility for the successful organization and management of occupational programming, 83% of the teachers and 77% of the administrators reported having total responsibility for the management of occupational programming.

These responses of teachers and administrators seem to indicate that both groups perceive themselves as bearing TOTAL RESPONSIBILITY. In light of the general consensus that lines of authority are clear to all personnel, it may appear contradictory that both respondent groups concurrently report having total responsibility for managing occupational programs. Perhaps, however, each respondent group possesses a different interpretation regarding what constitutes "TOTAL RESPONSIBILITY" for management of programming. For administrators, that responsibility might have a fundamental policy orientation. Front line staff, on the other hand, may accept total responsibility for daily policy implementation.

In review, the Boston Program Audit Team gathered information that sheds some light on the overall management structure within which policies are formulated and implemented at the school and program level. The results of the Boston Program Audit suggest that the authority for policy decisionmaking rests in the administrative echelon, an organizational characteristic common to all bureaucratic structures. Perhaps a more significant consideration is the finding that specified procedures are less well understood by middle school occupational teachers and guidance personnel than by their counterparts at the high school level. There also appears to be a greater likelihood that the input of high school teachers will impact upon procedures affecting the operation of occupational programs than will the input of middle school teachers. Although the organizational hierarchy may not be concretized in the form of organizational charts in all cases, an understanding of the lines of authority and communication seems to exist among respondent groups. Whether or not these communications channels are effective seems to be questionable.

Finally, disagreement in perceptions about responsibility for organizing and managing occupational programs may arise from differing interpretations as to the sphere of that responsibility.

In order to gain insight into the consequences of the management and administration structure for occupational programming, two features of program functioning will be considered in the sections that follow. First, policies and procedures that pertain to the process of program modification will be examined. Discussion will then turn to overall recordkeeping concerns.

a. Analysis of Data Pertaining to Occupational Program Modification

When administrators were asked whether or not procedures have been established for modifying, evaluating, and phasing out occupational programs, over 70% (N=67) reported the existence of such procedures for program modification and program evaluation,* while only 44% (N=61) stated that there were procedures for phasing out programs. Given the frequently voiced criticism that many existing occupational programs are outdated, it seems important to examine other evidence relating to program modification/improvement. Several relevant findings are presented below:

- When the responses of administrators to the question of determinants of program revision are rank ordered, information from follow-up studies, and state and local demographic information (including job availability and future job outlook) are rated as the least important determinants.
- Thirty-three percent of teacher (N=219), 46% of administrators (N=56), and 32% of guidance staff (N=28) reported that needs assessment data are usually used in decisionmaking concerning program expansion, modification, and termination; 20% of teachers (N=219), 9% of administrators (N=56), and 14% of guidance staff (N=28) stated that needs assessment data are never used for these purposes.

*It should be remembered that ongoing program evaluation is a legal mandate of each compliance standard considered in this chapter: P.L. 94-482, Chapter 74, U.S. Office of Civil Rights Guidelines, and the Unified Plan.

- When interviewed regarding the extent to which program modifications have been instituted to reflect changes in job availability, 17% of teachers (N=18), 25% of administrators (N=16), and 20% of guidance staff (N=25) stated "NOT AT ALL."

- When interviewed about extent to which changes in occupational programs are implemented in response to technological advances, 45% of teachers (N=18), 74% of administrators (N=15), and 48% of guidance personnel (N=25) responded "SOMEWHAT " or "NOT AT ALL."

It seems that in many schools* there are provisions for program change (not necessarily including procedures for terminating programs that have become obsolete). There is some evidence to suggest, however, that such mechanisms for change may not be consistently associated with or activated by developments beyond the classroom setting. It might therefore be concluded that the internal management and administration of occupational programming might better serve the needs of the student population by increasing the correspondence between policies and procedures that are adopted and implemented at the school and program level and the changing outside environment.

b. Analysis of Data Pertaining to Recordkeeping in Occupational Programs

The maintenance of accurate and complete records can provide both school personnel and outside observers with valuable information about the day-to-day management and functioning of an educational delivery system. In addition, records that are representative of the actual dynamics of a system (that is, records that document procedures that have actually been implemented) can constitute useful baseline information for assessing the adequacy of that system's service delivery and its compliance with legislative mandates. The Unified Plan emphasized the difficulties associated with performing evaluation of occupational programming in Boston in the absence of information that is accurate, complete, and available.

*High schools consistently reported a higher incidence of such provisions than middle schools, with an average 9% difference between the responses of high school and middle school administrators.

Consequently, the Boston Program Audit Team investigated the status* of recordkeeping procedures within occupational programs. Information concerning recordkeeping was obtained from self-reports, on-site interviews, and on-site observation.

Results of on-site observation and on-site interviews concerning the availability of certain documents appear in Table 2.17, below. Those documents discussed elsewhere in this report (e.g., curriculum and enrollment information) are intentionally excluded from this table. For purposes of comparison, positive responses are reported for middle schools and high schools.

The findings presented in Table 2.17 exhibit a high degree of variability both across respondent groups and between middle schools and high schools for given documents. One rather general trend that emerges is that requests by on-site observers to examine particular documents could not be consistently fulfilled, in spite of the indication from various respondents that such documents were available. Requested documents seemed to be slightly more available at the high school level. Middle schools, however, would not be expected to provide at least one of these documents (i.e., listing of current job opportunities). On the other hand, there is no obvious explanation for the differences between high schools and middle schools regarding the availability of such documents as written program evaluation procedures, needs assessments, and course descriptions.

When various documents are considered individually, several findings are noteworthy. For example, although on-site observation tended to confirm the responses of middle school administrators that the philosophy and goals of occupational education were available in written form, interviews with middle school teachers and guidance counselors failed to confirm the existence of such a document in many cases. In addition, the majority of both middle school and high school teachers reported the existence of documented teacher evaluation procedures, although such written documents could not always be produced.

*This status assessment focused on the availability of records. The accuracy of such records could only be validated in certain instances, which will be so noted.

SUMMARY OUTLINE

Unified Plan Implementation: Status of Compliance
as of March, 1980

UNIFIED PLAN ISSUE	COMPLIANCE/NON-COMPLIANCE	SOURCE(S) OF DATA*
B. Chapter 766	B. NON-COMPLIANCE: Program enrollment by Chapter 766 students cannot be systemically documented even in programs designated as "substantially separate"; conditions incompatible with mainstreaming reported to exist in system (e.g., accessibility, equipment, tools, materials, content); support services reported to be lacking.	B. Program Demographic Form; schoolwide Demographic Form; on-site Long Form Sections I, V-VII; Self-Evaluation Sections I-III, V-VIII and Summary.
C. Chapter 71A	C. NON-COMPLIANCE: Program enrollment by Limited English speaking students cannot be systematically documented even programs designated as "magnet centers"; written materials reported to be incompatible with enrollment by LEP students in regular occupational programs; support services reported to be lacking.	C. Program Demographic Form; schoolwide Demographic Form; on-site Long Form Sections I, V, VII; Self-Evaluation Sections I-III, V-VIII and Summary.
D. Admissions Criteria.	D. NON-COMPLIANCE: Written admissions criteria not systematically documented; student composition in program areas not systematically recorded evidence that quotas are observed inconsistently.	D. Program Demographic Form; schoolwide Demographic Form; on-site Long Form Sections I, III, V-VIII; Self-Evaluation Sections I-III, V-VIII and Summary; student survey.

* See Appendix C for samples of questionnaires

SUMMARY OUTLINE

Unified Plan Implementation: Status of Compliance
as of March, 1980

UNIFIED PLAN ISSUE	COMPLIANCE/NON-COMPLIANCE	SOURCE(S) OF DATA*
C. Employability-skill programs for 26,500 out-of-school youth (16-21).	C. NON-COMPLIANCE: Project YES serving 100 or more youth.	C. Information provided by Kenneth Caldwell, Acting Manager, Student Support Services on 7/30/80.
D. Increase non-school resources; collaborate with community and private agencies.	D. PARTIAL COMPLIANCE: Collaborative occupational training experiences available at a limited number of sites (e.g., John Hancock Life Insurance, Gillette).	D. Listing of extant programs made available by Transitional Director of Vocational and Career Education; no data collected by Boston Program Audit at off-campus sites.
E. Strong, centralized management.	E. NON-COMPLIANCE: System in "reorganization"; Plan mandated management organization not implemented.	E. Self-Evaluation Section I and Summary; on-site Long Form Section I; on-site observation; memo from Robert Wood to School Committee on 7/8/80.
II. Compliance with State Law (pp.8-11)		
A. Chapter 622	A. NON-COMPLIANCE: Program enrollments exhibit racial/sex imbalance.	A. Program Demographic Form; school-wide Demographic Form; on-site Long Form Sections I, III, V-VII; Self-Evaluation Sections I-III, V-VIII and Summary

* See Appendix C for samples of questionnaires

SUMMARY OUTLINE

Unified Plan Implementation: Status of Compliance
as of March, 1980

UNIFIED PLAN ISSUE	COMPLIANCE/NON-COMPLIANCE	SOURCE(S) OF DATA*
I. Sub-Goals of Plan (pp. 7-8) A. Middle school exploratory occupational programs for all students, with strong career guidance emphasis.	A. NON-COMPLIANCE: Career guidance phased out; evidence that middle school programming presents sequencing and scheduling difficulties that are obstacles to service delivery; no clear evidence that all students served in each grade.	A. On-site Short Form; program Demographic Form; listing of extant programs made available by Transitional Director of Vocational and Career Education.
B. Employability-skill programs for 70% of secondary students.	B. Unable to determine due to inconsistencies in demographic data.	B. On-site Short Form; school-wide Demographic Form; program Demographic Form.
1. Special programs for all Chapter 766 students (4000 students).	1. NON-COMPLIANCE: Eleven special needs programs reported to be implemented; teachers unable to identify Chapter 766 students who are mainstreamed.	1. School-wide Demographic Form; program Demographic Form; Self-Evaluation Section III.
2. Special programs for all bilingual students (1000 students).	2. NON-COMPLIANCE: Schools reported 21 limited English-proficiency students enrolled in special programs; teachers unable to identify 71A students who are mainstreamed.	2. School-wide Demographic Form; program Demographic Form; Self Evaluation Section III.

* See Appendix C for samples of questionnaires

Throughout the presentation of results in this chapter, efforts have been made to indicate the irregularities that characterize information reported by schools in different districts, programs in different cluster areas, and so on. In contrast, this outline considers overall compliance from a systemwide perspective. The reader is therefore encouraged to recognize that a designation of noncompliance for any particular Unified Plan issue is not intended to mean that evidence of noncompliance exists in every program or school. As we have seen, some programs and schools in some districts contribute proportionally more or less to overall favorable and unfavorable results.

Having explored these idiosyncracies throughout this chapter, however, it seems appropriate that a final, systemwide assessment of compliance be made using a standard that is as rigorous as the mandates of the Unified Plan were intended to be.

Information collected during the Boston Program Audit is inadequate to assess the status of compliance with mandates for work experience, although the findings reviewed above suggest that stipulations regarding state-funded Chapter 74 cooperative programs may not be consistently fulfilled.

Systemwide, there was a high rate of "DON'T KNOW" responses to questions concerning the number of students and staff participating in cooperative work experience, and the overall availability of such work experience. Guidance counselors from District 3 and District 9 provided a higher than average percentage of "DON'T KNOW" responses. Perhaps the scarcity of information that could be gathered is related to the geographical dispersement of programs offering a work component across districts. One cannot help but wonder, however, what effect this lack of knowledge about cooperative programs, particularly among the guidance staff in some schools, might have on students' awareness of and access to occupational programs offering a work component. Further study of this issue seems to be warranted.

d. Status of Unified Plan Compliance

Discussion of Boston Program Audit results that pertain to various legal mandates concludes with an overall summary of Unified Plan compliance. Presented in outline form,* this summary parallels the organization of the Unified Plan. Thus, there is some repetition within the summary corresponding to re-emphasis of Unified Plan mandates within the Plan itself.

A status assessment of compliance, partial compliance, and non-compliance is presented for each issue, with brief supporting detail and references to relevant data sources. The standard that is used to determine the compliance status for any issue is the Audit Team's standard of compliance, mentioned earlier. In review, according to the Team, compliance and noncompliance cannot coexist. That is, in order for a judgment of compliance to be made, there can be no evidence of non-compliance.

*The topical outline was prepared by legal counsel for the State Department of Education for use in this report. Page references are provided so that the reader can locate the fully developed description of each issue in the text of the Unified Plan as revised on July 27, 1978 (including amendments approved by the court on January 26, 1979).

and that students have equal access to such employment experiences irrespective of race/ethnicity and sex.

Information about availability of and access to cooperative programs is inconclusive due to a low response rate to relevant questions. For example, of the three high school administrators replying to a question concerning the number of cooperative positions available, responses were evenly divided across the possible responses listed below:

- The number of positions exceeds student demand.
- The number of positions equals student demand.
- The number of positions is inadequate to meet student demand.

Given the small number of administrator-respondents, no conclusions can be drawn about the overall availability of work experience components. It is interesting to note, however, that these administrators' responses were obtained from different schools in different districts, thus suggesting the possible variability in supply and demand across districts.

Some insight into the extent to which the work experience component conforms to requirements specific to state-funded Chapter 74 programs can be gained by examining the following responses of school personnel:

- When asked if a written training agreement existed for each student, signed by the staff-coordinator, the employer, the student, and a parent, 64% of guidance staff (N=25) responded "IN MOST CASES," 20% stated "IN SOME CASES," and 16% replied "IN FEW OR NO CASES."
- In response to a question concerning the frequency with which students are supervised (or observed) in their employment setting, 57% of guidance staff (N=14) stated "WEEKLY," 21% replied "EVERY OTHER WEEK," 14% stated "ONCE A MONTH," and 7% responded "ONCE A QUARTER."
- Among teachers who responded that procedures do not exist for assessing compliance with laws and regulations regarding minors' employment and safety, teachers of state-funded Chapter 74 programs are overrepresented.

documenting outdated listings of employment opportunities (as mentioned in Section G.1.b. of this Chapter), the Boston Program Audit gathered the following information about the placement process:

- When asked if a program for placing graduates into jobs has been planned and can be documented, 34% of high school administrators (N=41) stated "NO;" to the same question 88% of high school guidance staff (N=24) responded "YES."
- When asked if findings from short-term and long-term placement studies are used to improve the placement process, 44% of high school administrators (N=39) and 26% of high school guidance staff (N=19) stated "NO."
- Forty-seven percent of high school teachers (N=30) reported in on-site interviews that students were SOMEWHAT/INADEQUATELY INFORMED about job opportunities in their occupational areas.

When the results of the Student Survey are presented (see Section J of this Chapter), and the responses of students enrolled in occupational programs are compared with those who are enrolled in academic programs, further insight into the employment orientation of students will be gained. At this point, it is important to note that in general, students enrolled in occupational programs seem to know less about and to be planning less for future employment than other students. In addition, they report having minimal contact with guidance personnel.

In summary, it seems that there are particular areas in which mandates for guidance are not being fulfilled. Access and placement remain, for the Boston Public Schools, both legal priorities and practical priorities without which the overall goals of occupational education, as defined by the Unified Plan, cannot be attained.

c. Work Experience

Various state and federal mandates, including P.L. 94-482, Chapter 74, the Unified Plan, and U.S. Office of Civil Rights Guidelines, specify that a work experience component (e.g., cooperative, work-study, and/or apprenticeship) be offered to students enrolled in occupational education,

The clearcut trend emerging from these results is the higher degree of full implementation of sex equity provisions reported by middle school guidance staff. This finding is particularly striking when the diminished role of middle school Career Guidance is remembered. It also seems to contradict the responses of guidance staff presented in Table 2.19, in which a lower percentage of middle school guidance personnel reported having instituted recruitment procedures that address nontraditional occupations. One possible explanation of this contradictory phenomenon is that because middle school occupational programming is required, and its emphasis is more on career exploration than employment, per se, there may be fewer overall recruitment efforts, and what efforts there are may not be oriented toward occupations.

Further insight into the implementation of sex equity provisions can be gained by examining the findings according to district. Districts in which 100% of counselors from middle schools and high schools reported that sex equity provisions have been fully implemented in at least one of the specified areas are Districts 1, 3, 4, 5, and 7. Districts in which there is an overrepresentation of responses indicating that sex equity provisions have NOT been implemented are Districts 2, 6, and 8.

These results, combined with the data on actual male/female enrollments, suggest that more work needs to be done in the area of sex equity, particularly in high schools. Efforts to overcome sex discrimination, sex stereotyping, and sex bias in order to insure equal access to occupational programs by both sexes seem to be particularly needed in District 2, 6, and 8 schools. The middle school years, in which occupational programming in three exploratory areas is required (i.e., Industrial Arts, Home Economics, and Business), may provide especially opportune circumstances for encouraging sex equity in occupational education.

The final guidance mandate concerns the placement process. In addition to other legislative stipulations regarding placement, the Unified Plan specified the conceptualization and implementation of a job development and placement component through which Plan-mandated activities could realize "far-reaching results and positive impact" (p.63). In addition to

disparity between perceptions of teachers and guidance personnel is noteworthy. In almost every instance, guidance personnel provided more positive responses than teachers concerning the adequacy of access-related activities.

There are also differences among respondent groups' perceptions of access to nontraditional programs.* Responses of guidance counselors to questions specifically related to overcoming sex discrimination provide information concerning the efforts that have been undertaken in response to legal mandates in this area. Comparisons of responses from middle school and high school guidance staff appear in Table 2.20 below:

Table 2.20
Guidance Staff Perceptions Regarding
Implementation of Sex Equity Provisions

Sex Equity Provisions	Guidance Counselors	
	Middle School	High School
	(N=20)	(N=25)
	%**	%**
Review of course materials and curricula for sexism	75	64
Development of non-sexist counseling techniques	81	69
Provision of counseling support for students enrolled in non-traditional programs	71	60
Modification of enrollment and testing instruments to ensure equal access	65	56
Informing occupational staff about sex equity mandates	80	67

** % = Percentages of responses indicating that provisions have been FULLY IMPLEMENTED.

*A program is commonly considered to be nontraditional for members of one sex if less than 20% of enrolled students are members of that sex. For example, plumbing is generally nontraditional for female students, and child care is generally nontraditional for male students.

Table 2.19
Staff Perceptions of the Occurrence of Mandated Guidance Activities

Type of Activity	Teachers		Administrators		Guidance	
	MS**	HS**	MS	HS	MS	HS
	%* N=107	%* N=174	%* N=18	%* N=40	%* N=20	%* N=25
Recruitment procedures addressing nontraditional occupations for both sexes	33	48	56	58	59	71
Special provisions for enrollment of special populations	41	43	63	68	35	60
Staff informed about special students' needs	22	19	26	23	55	48
Provision of support services to programs serving special needs students	25	30	70	28	57	48

*Percentages of responses indicating that the activity USUALLY occurs are reported.
**MS = middle school; HS = high school

The self-reports of middle school teachers tend to reflect the lowest overall ratings that mandated guidance functions pertaining to equal access occur. High school teachers are in relatively close agreement with middle school teachers on each dimension, however. Although other respondent groups display some variability regarding the relative frequency of access-related activities, the largest discrepancy appears to exist between middle school and high school administrators regarding the extent to which support services for special needs students are provided. A high proportion of middle school administrators report that such provisions are USUALLY provided, and a relatively low proportion of high school administrators acknowledge that such provisions are USUALLY evident. Finally, the

- A middle school home economics teacher reported that "Chapter 766 students who are mainstreamed are not identified," an observation borne out in review of program demographic forms submitted by many schools.*

Finally, one high school department head who was interviewed on-site commented on the lack of information that occupational teachers have about the special needs of their students and about special needs students. This department head stated, "I have constantly asked for in-service for occupational instructors regarding specia' needs students."

b. Guidance

Legal mandates that pertain to the role of guidance in occupational programming focus on student recruitment and placement functions insuring equal access. Results of the Boston Program Audit provide some insight into the extent to which these functions are currently fulfilled, as mandated. Table 2.19 presents the perceptions of teachers, administrators, and guidance staff regarding the frequency with which recruitment and placement activities insuring equal access occur.

*Lack of awareness of the contents of students' individual education plans (IEP's) and/or participation in the preparation of those plans would indicate that any progress toward accomplishing the stated IEP goals would be coincidental. Mainstreaming, as the concept is developed in the law and operationalized in the schools, is not the same as ignoring or camouflaging students' special needs.

When the reponses of teachers concerning the availability of special needs inservice training are analyzed according to program cluster, it appears that teachers of Business and Office programs have been afforded less opportunity for special needs training than have respondents from other cluster areas, with only 40% of Business and Office respondents (N=39) reporting that such inservice training had been offered.

Analysis by district reveals that, according to teacher self-reports, relatively more opportunities for inservice training for special populations were available in District 3 (83%, N=12), District 4 (92%, N=12), and District 6 (94%, N=17). Special needs inservice training was less likely to have been available in District 2 (63%, N=19), District 5 (48%, N=25), and District 8 (58%, N=12).

Although it is unknown to what extent inservice activities have actually been undertaken in reponse to Unified Plan mandate, the information collected by the Boston Program Audit suggests that in high schools and middle schools in some districts (i.e., Districts 3, 4, and 6), inservice training for special populations has high visibility. Whether or not the consequences of available inservice in this area have been translated into outcomes with equally high visibility deserves further attention.

Self-reports of occupational teachers, as well as anecdotal observations regarding special needs students, suggest that there might be a continuing need for inservice training, as supported by the findings below:

- Twenty-nine percent of middle school teachers (N=98) and 17% of high school teachers (N=147) report that program organization and management do not reflect sensitivity to individual differences among the stucent population; among the negative responses of high school teachers, teachers of state-funded Chapter 74 programs are overrepresented, with 31% (N=26) reporting a lack of sensitivity.

- When asked whether or not classroom instruction is incividualized in order to take into consideration differences in learning styles, over 50% of teachers in the following cluster areas reported "SOMETIMES/NEVER": Guidance and Career, 61% (N=18); Business, 54% (N=80); Trade and Industry, 54% (N=95); Marketing and Distribution, 60% (N=5); and Technical, 63% (N=20).

- The audit finding that federally-funded programs contain the highest concentration of uncertified teachers was validated in this investigation.
- State-funded Chapter 70 programs have a higher proportion of uncertified teachers than self-reports indicated.

Aside from state certification requirements for Chapter 74 teachers, another area in which teacher qualifications have been mandated is that of inservice training for teaching special needs and bilingual students. The Unified Plan outlined a comprehensive, three-year inservice schedule specifically oriented toward "giving each teacher sufficient knowledge and skills concerning the needs of Chapter 766 vocational/occupational education students to work successfully with them"(p. 61). An additional one-year program was to have been undertaken for bilingual inservice training.

Because special needs inservice training was to have been completed at the end of the 1978-1979 academic year and bilingual inservice training at the end of the 1975-1976 academic year, data concerning these particular training programs were unavailable at the time the Boston Program Audit was conducted. Teachers, administrators, and guidance counselors were, however, asked about the content of inservice programs that had been offered during the last 12 months.* Programs addressing special populations were reported to have been offered by the following percentages of respondents:

	Middle School	High School
Teachers	74% (N=57)	85% (N=98)
Administrators	67% (N=18)	82% (N=37)
Guidance	63% (N=16)	74% (N=19)

*It should be noted that responses only indicate to what extent such training had been offered; participation in inservice training was not measured.

The relative proportion of fully certified teachers can be seen to fluctuate according to program cluster, with the highest proportion of teachers reporting that they are fully certified in the areas of Marketing and Distribution, Other (e.g., Transportation), and Business, and the lowest proportion of fully certified teachers in the areas of Special Needs, Guidance and Career, Home Economics, and Health.

When teachers' self-reports regarding certification are examined by district, the following pertinent trends emerge:

- Districts in which over 85% of the teachers report being fully certified are District 1 (94%, N=18), District 3 (90%, N=30), District 4 (87%, N=23), and District 8 (95%, N=21).
- Teachers who reported having provisional certification are over-represented in District 6 (20%, N=35) and District 9 (15%, N=85).
- Teachers reporting to hold no certification are distributed unequally across districts. Only in District 5 (7%, N=45), District 7 (4%, N=26), and District 9 (1%, N=85) did teachers report having no certification.

Because teachers' responses to the question of certification status revealed some areas of relative weakness, the State Department of Education, Division of Occupational Education, undertook a verification of the status of certification among occupational teachers employed at the time of the conduct of the Boston Program Audit. A full description of the results of this certification verification is presented in Appendix A. Highlights are summarized below.

- Evidence of uncertified teachers was discovered in all districts, not just the three districts in which teachers self-reports indicated lack of full certification.
- Forty-one percent of the occupational programs (N=466) in which teacher certification was verified were taught by uncertified teachers at the time the Boston Program Audit was conducted.
- Verification of certification/approval among teachers of state-funced Chapter 74 programs revealed that one-third did not meet the standard for state funcing, in contrast with more positive self-reports.

they were not certified. A slightly lower percentage of middle school teachers (85%) than high school teachers (39%) reported that they had full certification.

Because teachers of state-funded Chapter 74 programs are required to meet specific criteria regarding certification, self-reports of teachers stating that they are FULLY CERTIFIED are presented below according to program funding source:

- Chapter 74 -- 97% (N=30)
- Chapter 70 -- 90% (N=211)
- Chapter 636-- 64% (N=14)
- P.L. 94-482-- 61% (N=38)

These results indicate that almost all teachers of state-funded Chapter 74 programs who provided information concerning their certification status reported that they possess full certification. Because the majority of state-funded Chapter 74 and Chapter 70 programs are located in high schools, it seems logical that the self-reports of high school occupational teachers would reflect the overall higher percentage of fully certified Chapter 74 and Chapter 70 teachers. Of particular note, however, are the responses of teachers of state-funded Chapter 636 and federally-funded P.L. 94-482 programs, whose answers stand in rather dramatic contrast to those of teachers of Chapter 74 and Chapter 70 programs.

Similar disparities among self-reports of teachers are revealed when full teacher certification is considered by program cluster, as presented below:

- Business -- 93% (N=81)
- Guidance and Career -- 71% (N=17)
- Health -- 80% (N=5)
- Home Economics -- 81% (N=36)
- Marketing and Distribution -- 100% (N=6)
- Other -- 100% (N=2)
- Special Needs -- 50% (N=16)
- Technical -- 84% (N=31)
- Trade and Industry -- 90% (N=93)

- Unified Plan compliance is reported to be most adequate by administrators from Districts 3, 7, and 8, with 100% of District 3 administrators (N=3), 83% of District 7 administrators (N=6), and 80% of District 8 administrators (N=5) affirming its adequacy. Reports of inadequacy are most heavily concentrated in District 4 (60%), District 1 (50%) and District 9 (40%).

- Responses of administrators in Districts 3 (N=2), 4 (N=5) and 8 (N=6) exhibit unanimous agreement that compliance with federal legislation and Chapter 74 state regulations is ADEQUATE.

- Fifty percent of administrators in District 2 (N=4) and 40% of administrators in District 9 (N=15) reported that compliance with the stipulations for Chapter 74 state-funded programs NEEDS IMPROVEMENT.

Although administrators from each district and from middle schools and high schools may apply differing standards for what constitutes "adequate" compliance,* their responses reveal that at least in some areas there may be reason to suspect that non-compliance exists. In an area such as compliance, in which violation may be associated with penalties such as loss of funding, the fact that any school administrators reported perceptions of non-compliance seems to warrant further investigation.

Results of the Boston Program Audit that pertain to compliance with legal mandates in the areas of access, facilities and equipment, curriculum, advisory committees, and program evaluation have been discussed in previous sections of this chapter and will not be summarized at this time. Findings that relate to each of the remaining areas of compliance are reviewed below. Discussion of the internal management and administration of occupational education then concludes with an outline summarizing the status of Unified Plan implementation.

a. Teacher Qualifications

In response to a question that asked teachers to classify their certification status, 86% of teachers (N=304) responded that they were fully certified, 13% that they were provisionally certified, and 2% that

*On-site Team members maintain very strict standards for compliance: presence of violation within any mandated area constitutes evidence of non-compliance. It cannot be assumed, however, that administrators' standards are equally rigorous.

and high school administrators to questions regarding the adequacy of compliance with specific legal mandates are compared. Table 2.18, below, presents these results:

Table 2.18
Administrators' Perceptions Regarding the Adequacy of Compliance with Relevant Legislation

Legislative Requirements	Administrators			
	Adequate		Needs Improvement	
	MS*(N=20)	HS*(N=35)	MS (N=20)	HS (N=35)
	%	%	%	%
Compliance with the mandates of the Federal Court ordered Unified Plan	80	57	20	43
Compliance with Federal regulations pertaining to vocational education	80	83	20	17
Compliance with state regulations for Chapter 74 programs	78	75	22	25

*MS = middle school; HS = high school

Responses to questions concerning compliance with the mandates of the Unified Plan, Federal legislation pertaining to vocational education, and Chapter 74 state regulations reveal relative consistency among middle school administrators that compliance is generally adequate. High school administrators, on the other hand, seem to indicate that compliance with Unified Plan mandates is an area of concern, with nearly half reporting that improvement is needed.

When responses of administrators are examined according to district, the following patterns emerge:

- Access (P.L. 94-482; Chapter 74; Unified Plan; U.S. Office of Civil Rights Guidelines);
- Facilities and Equipment (P.L. 94-482; Chapter 74; U.S. Office of Civil Rights Guidelines);
- Teacher Qualifications (Chapter 74; Unified Plan);
- Curriculum and Instruction (Chapter 74; Unified Plan);
- Guidance (P.L. 94-482; Chapter 74; Unified Plan; U.S. Office of Civil Rights Guidelines);
- Work Experience (P.L. 94-482; Chapter 74; Unified Plan; U.S. Office of Civil Rights Guidelines);
- Advisory Committee (P.L. 94-482; Chapter 74; Unified Plan);
- Evaluation (P.L. 94-482; Chapter 74; Unified Plan; U.S. Office of Civil Rights Guidelines).

Each of the legal mandates has a built-in evaluation component, as noted above, requiring that compliance with its mandates be monitored over time. In fact, as mentioned previously, the Unified Plan specified various organizations (including the Boston Public Schools; Department of Education; Citywide Coordinating Council; Citywide Parents' Advisory Council; and District Advisory Councils) as participatory agents in evaluation/monitoring activities.

The purpose of this section is to summarize findings of the Boston Program Audit relative to areas of compliance that have not been discussed elsewhere in this chapter. The assumption that responsibility for internal management and administration of occupational education includes accountability for meeting legal standards* is basic to the inclusion of compliance-related findings in this section.

Before reviewing findings specific to the areas of teacher qualifications, guidance, and work experience, the self-reports of middle school

*Whether or not legal accountability rests within the schools or at some higher administrative level can be ascertained by those who are authorized to take appropriate next steps. Accountability is a clear mandate of the Unified Plan.

Among the documents available at the time of on-site visitation, several were subjected to verification. The results of Team members' assessments of the content validity of these documents are described below:

- Of the samples of job opportunity listings that were provided on-site at the high school level, 50% were reported by on-site observers to contain outdated employment listings.
- On-site Team members reported that of the Advisory Committee membership lists that were produced by high schools, only 28% reflected adequate representation by both sexes.
- When written inventories of books, supplies, and non-consumable materials were reviewed by Team members, 18% were reported to be incomplete (at the high school level only).

In sum, the amount of variability among the responses regarding document availability, along with inconsistent availability per se, suggests that earlier indications regarding the ineffectiveness of occupational education's school-based management and administration may be confirmed. An administrative hierarchy characterized by communication irregularities may incur a lack of associated accountability. With respect to recordkeeping functions specifically, the results of the Boston Program Audit provide some indication that clearly delineated spheres of responsibility in this area may not have been consistently established at the school level. In conclusion, the Boston Program Audit Team gathered information that suggests the absence of coordination (as defined by the Unified Plan) within the management structure. The Unified Plan defines coordination as "the process of integrating into a harmonious relationship the administrative, organizational and instructional activities of a vocational program and directing them toward a common purpose"(p.A3).

2. Analysis of Data Pertaining to Compliance Monitoring

Elsewhere in this report there have been references to the various legal mandates to which the occupational delivery system must be responsive. Areas in which legal mandates impinge upon the occupational delivery system were featured in a matrix in the introductory section of this chapter and are summarized below:

Table 2.17
Availability of Selected Documents Pertaining to Occupational Education in Middle Schools and High Schools

Type of Document	Team Member Observation*		Teacher Interview*		Administrator Interview*		Guidance Staff Interview*	
	MS***	HS***	MS	HS	MS	HS	MS	HS
	% N=22	% N=55	% N=23	% N=65	% N=20	% N=45	% N=20	% N=51
Philosophy and Goals of Occupational Education	68	67	25	79	80	76	30	80
Evaluation Procedures (Program)	22	43	20	63	35	54	**	36
Evaluation Procedures (Teacher)	57	55	83	85	**	**	**	**
Written Admissions Criteria	33	40	33	52	0	50	**	60
Job Opportunities	0	33	25	52	**	**	0	73
Advisory Committee Membership	**	29	**	67	**	25	**	36
Advisory Committee Meeting Minutes	**	15	**	31	**	25	**	43
Needs Assessment	0	28	75	60	100	67	**	50
Course Description	0	69	52	84	100	97	40	87
Daily Attendance Record	100	94	100	97	100	100	**	87
Inventory of Equipment, Books and Non-consumable Supplies	75	76	75	96	**	**	**	**

*Affirmative responses are reported.
**Information could not be obtained.
***MS = middle school; HS = high school